Industrial Finishing

Devoted to the Finishing of Industrial Products
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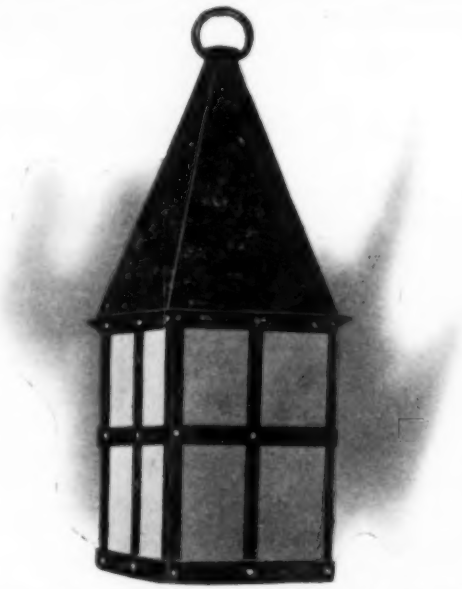

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CONTENTS FOR MARCH, 1927

With the Editor 7
Cleaning Compressed Air, by R. Watts 9
Why Paint Peels, by B. M. C. 10
Facts About Modern Enamels, by F. T. Goldermann 12
Fillers for Defects—Where Lacquer Is Used, by J. K. Cooper 14
The Automobile Painting Field, by R. L. Masterman 15
The White Pigments, by R. L. Hallett 18
What Will Satisfy the Demand for Special Furniture Finishes? By E. J. Clary 20
Two Types of Black Pigments, by Luther Martin 24
Why the Finish Crazes and Cracks—I, by Chas. Blandford 26
Avoiding Damage to Finished Products, by D. A. H. 30
The Factory With Secret Processes, by D. A. Hampson 35
Why Viscosity Tests Are Important—I, by W. H. Martindale 38
Insist On Quality Finish, by J. C. H., Jr. 42
How Fast to Light Are Dyes? by George A. Prochazka, Jr. 44
Facts About Linseed Oil, by Russell W. Brandt 48
Editorial 54
Influence of Color on Designs
Custom Shop Finishing
Questions and Answers 58
Polishing Lacquer Finish, by G. A. H. and I. F. 58
For Luster on Polished Lacquer Surface, by H. P. & S. and I. F. 58
Finishing Fiber Furniture, by B. W. F. Co. and I. F. 60
Toy Train Tunnels, by O. E. S. Co. and I. F. 62
For Polished Silver Effect, by E. M. Stephenson and C. O. Miguery 62
Glue-Sizing and Staining Fiber Furniture, by B. W. F. Co. and I. F. 64
Cleaning and Baking Aluminum Castings, by Henry H. Smallwood 69
Finish for Iron Castings, by C. C. M. D. and I. F. 70
The Baked Enameling of Car Bodies "En Masse," by K. N. Kathju, M. S. 72
Cleaning Metal for Japan, by I. C. Co. 82
Notes on Ventilator Flue 82
Greasy Hardware? No! It's Lacquered Now, by E. M. Stephenson 85
Salesman Improves Store Fixture Finishing, by Joseph Cowan 89
Built-Out Spray Booths, by C. E. James 93
Furniture Lacquer—Good and Otherwise, by J. C. Hertstein, Jr. 94

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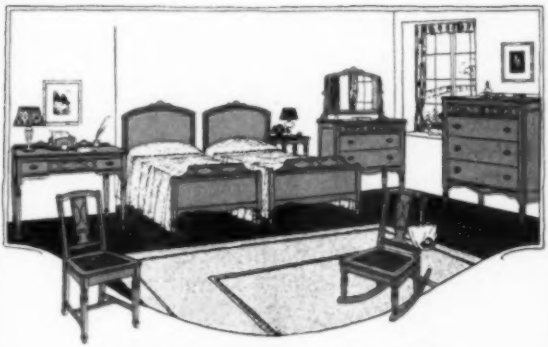

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With the Editor

INDUSTRIAL ACTIVITY, prosperity and profits in this country reached new high records in 1926. What has occurred in the way of business and industrial progress since 1920 and 1921, is indeed amazing, and its continuation in an increasing volume has given rise to much speculation as to what is responsible for it, whether it can continue, how long it may continue, etc.

Henry A. E. Chandler, economist, writing in *Commerce Monthly*, published by the National Bank of Commerce in New York City, goes into the subject "Basic Factors in the Future Trend of Business" with banker's thoroughness, analyzes it and arrives at conclusions which are both interesting and logical. He says:

"After a review of the principal factors that have contributed to the remarkable business development of the last four years, giving due weight to each, it would appear that the one greatest factor that has constituted the rock-bottom basis of this new buying, has been the increased productive efficiency of management and labor, plus the distribution of the increased product largely to the consuming public in the form of wages.

"The essential conditions to the maintenance of a high volume of business in a reasonably self-contained economic unit such as the United States are:

1—A high degree of productive efficiency;

2—A wide distribution of income and a high standard of living;

3—A proper balance between consumption and saving, and in capital equipment as among the various industries;

4—Ample credit facilities well controlled;

5—Confidence in the future."

Further, he points out the fallacy and danger of an old-fashioned custom which we are guilty of, namely, 1—expecting the more or less regular recurrence of alternate periods of prosperity and depression, and 2—of judging future business too much in terms of what occurs in the so-called key industries, and formulating business judgment by reference to temporary tendencies in these industries.

In the light of these conclusions, it is apparent that every organization, company or individual who is instrumental in placing in service improved equipment, materials, supplies or methods contributes something of great value toward the continuance of national prosperity, which is what we all desire.

W. H. Rohr

Managing Editor

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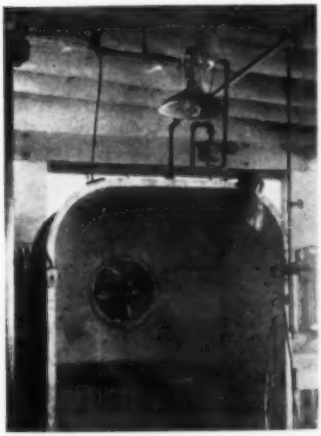
Cleaning Compressed Air

Compressed air in pipe lines acquires moisture which condenses in the lines and, if not removed, will damage the finish applied with spray guns

By R. Watts

WATER, oil and dirt in compressed air are the sources of many troublesome difficulties for the industrial finisher. It does not take an apprentice long to learn the damage they can do a good finish, although he may not know that they can get into his mixture by way of the compressed air as well as by way of dirty containers and careless handling. As for the damage they can do to spray guns, manufacturers have repeatedly pointed out the dangers of clogged nozzles and rusted or choked valves.

Most of the difficulties in the way of keeping a supply of compressed air dry and free from moisture, arises from the fact that air heats when it is compressed and gives up water when it is cooled. The atmosphere always contains a certain amount of water, sometimes an extraordinarily large amount, especially on humid days and in rainy weather. For that reason, when air is drawn into a compressor and is heated by the act of being compressed, the tiny water particles are usually turned into steam, since the compression temperatures are frequently well above boiling.



A typical air separator and air trap installation in pipe line above spray booth. The separator is above the electric light, while below the electric light, an air trap has been fitted to drain away the accumulated water.

Moisture Condensation

Naturally when the hot compressed air passes from the compressor into the storage tank and on into the piping system, it cools and the result is that the moisture settles out in the cool pipes just as the dew forms in the cool of the evening. That means that small quantities of water form in the low points of the pipe line and remain there until they are finally picked up by the moving current of air and carried along to the spray guns.

The usual method of drying the air after it has been compressed, involves the use of water separators at the compressor or on the storage tank. The difficulty with this method is that while it may take out most of the free water at this point, there is still cooling and heating in the pipe line due to temperature changes of the weather, as well as to cooling of the air itself, so

that there is still some condensation in the line.

The logical method, therefore, is to thoroughly clean the air just before it is used. This is particularly necessary in spray finishing, when the air supply comes from the common plant system, or from small tanks or compressors where, under heavy duty, most of the cooling takes place in the pipe lines.

The Air Separator

An example of how easily compressed air may be cleaned just before it is used, is to be found in an air separator, such as is shown in the accompanying picture—connected in the pipe line at a point above the electric light.

It has been found that when air passes quickly through a number of thicknesses of wire screen, the zig-zag path which the air must take causes all moisture and impurities to drop out and leave the air dry and clean.

The air separator shown in service in the picture, consists simply of a chamber which contains a smaller chamber made of many layers of wire screen. Dirty air flows into the inside of the screened chamber and passes out through the many meshes of wire and into the outer chamber. All moisture, oil and impurities drop out of the air, as it zig-zags through the wire mesh, and fall to the bottom of the chamber where they drain away. The air is thus completely stripped of every particle of water and oil.

A convenient method is to equip the drain pipe to the separator with a simple air trap—shown below the electric light in the picture—which automatically drains off all water and oil as it accumulates.

Why Paint Peels

Almost every house painter has had some experience with paint peeling off after a few months, or within a year or two after application. Perhaps his experience in this line has been confined to some other painter's work, which he was asked to repair.

The tendency of the last few years has been to attempt to do with two coats, what formerly was done with three. Many painters have been able to produce two-coat jobs which, at the moment, had the appearance of being equal to three-coat work, but time proved that there was a lack of permanency. In many cases the paint has been blamed for this deficiency; in others, the painter has been held responsible. In reality, the trend of the times is more to blame than either the paint or the painter.

Within the past year the writer had two experiences which illustrate the point in question. In one case a painter was figuring on the contract for repainting a house. He asked me to look at it, as the old coat was peeling off, though it had been on only two years. I knew the house, and remembered seeing it when it was new and received its first coat of paint. I was not surprised at its condition.

In reply to the painter's query, I expressed the opinion that so long as the old paint remained on the building, subsequent coats of paint could not be guaranteed to hold up well. The original coat of paint had been put on too thick! In other words, there was not enough oil in the first coat to bind it permanently to the wood.

Let us study this matter for a moment. A pure lead paint is

simply dry white lead and oil. The white lead comes in paste form, because it has been ground in oil; and with oil, the painter thins it to a consistency suitable for spreading. If he uses just enough oil in the first coat to make it spread on the wood, most of the oil will be taken from the lead and absorbed by the wood. Then there is not enough oil left with the lead to bind it and the wood together, and to protect the lead from the weather.

Many people have the idea that the lead is the life of the paint, but such is not the case. The life of the paint is the oil, and unless there is enough oil to bind the particles of lead together, and at the same time form a perfect union with the wood, the lead is sure to peel off in time.

The other case was the reverse of the one just mentioned. A painter had contracted to paint a new house with two coats. He had the first coat on, but the owner was not satisfied, and claimed that the coat was too thin. By mutual agreement the matter was referred to the writer. I investigated and decided that the painter understood his business, and had given the owner a better job than would have been the case had he put on the kind of coat the owner wanted.

The painter had mixed just enough white lead with the oil to seal the pores of the wood, in conjunction with the oil. As a result he was leaving a surface fit for a perfect union with the next coat of paint. What the owner wanted was two coats of "paint." What the painter put on was one coat of white lead primer, to be followed by a coat of paint. Such a job will never peel; it makes a permanent foundation for future applications of paint. Perhaps my decision would not have stood in a court, with a presiding judge who knew nothing about paint, but I was not concerned with the law so much as with practical, common sense. The painter might have given the owner a more costly job, but not a better nor more permanent job.

There was a time when dwelling houses were all painted with a coat of primer, followed by one or two coats of paint—perhaps one coat of paint the first year, to be followed by another coat the year after. In the race for speed and cheapness, an attempt is made to make the first coat do the work of two, but it cannot be done successfully. The painter who has any regard for his reputation would do well to advise against this effort at cheapness. If specifications call for only two coats of paint, the painter should find out what the customer expects of the first coat.—B. M. C.

In 1926, rates of industrial wages per hour in this country were 150 per cent above 1913. Full time hours of work were about 8 per cent less than in 1913.

"Pour Finishing"

The paint and varnish division of the du Pont Co. is making a survey of the various uses to which brush Duco is being put. Results to date show that the decorative method employed with vases, jars, etc., known as "pour finishing," has become a popular fad in many places and dealers report hundreds of persons using the material in this manner.

The method consists in simply pouring Duco over the pottery so that the streaks of color run down the sides and drip off. While one color is still wet another is poured on and successively other colors, until the article is completely covered. In drying, the colors blend producing many unusual color combinations.

Facts About Modern Enamels

Explaining briefly what modern enamels are made of, how they are made, what the function of each ingredient is, and why some enamels fail in luster, durability and other requirements

By F. T. Geldermann

IN THE finishing trades, what we designate as "enamel," consists essentially of pigment and a specially prepared liquid similar to varnish. It is a well known fact that a damar enamel may give a good hard and glossy surface when first applied, but later, under certain conditions, it sometimes becomes soft and easily damaged. Again, an enamel may go bad in regard to color, but still remain hard. This change may be due either to the varnish or to the pigment, or it may be caused unavoidably through lack of exposure to sufficient light.

Still another trouble may be found in chemical action between the varnish and the pigment. This fault—usually termed "livering"—may occur within the enamel thereby making it difficult to apply. A similar thickening can occur in mixed paint, generally when an oil containing too much acid has been used. All such contingencies face the manufacturer, and he must know the characteristics of the materials he is using.

In the finishing and enameling department of a juvenile-furniture manufacturing plant

The pigment employed in producing an enamel must be very fine, and the pigment and fluid medium are to be mixed together to form perfect amalgamation. The enamel must be dry with a good, permanent luster—as durable as that of good oil varnish.

Differences in Paint and Enamel

What is the essential difference between an enamel and ordinary oil paint? Well, there are several compositions which may, with equal accuracy, be called either paint or enamel. Paint is formed with such pigments as white lead, zinc oxide, etc., with linseed oil, a little drier and turpentine or other thinners. Many different pigments are used; also different vehicles or liquids, therefore the coating will be in accordance with the composition. They will have either a flat or dead surface, or more or less lustrous surface, or something between the two. Enamel is made by grinding the pigment with varnish or enamel oil, and then mixing in other liquids to form the desired consistency and other properties.

To make a first-class enamel requires of the manufacturer the grinding of the pigment to great fineness, the choice of a suitable liquid medium, and finally the grinding and mixing together of these materials in the most perfect manner. This perhaps seems like a simple operation, yet it is not as simple as it reads. If it were, probably no unsatisfactory enamels would be made.

The linseed oil used in grinding pigment for making an enamel, must be perfectly free of moisture. Some colors tend to retard the drying of enamel, and then gold size or other pale neutral japan must be added. These matters are mentioned here to show how careful the enamel maker must be. These driers have to be used with expert care, or serious results may occur to the mixture.

The thickened linseed oil used by enamel makers, in the preparation of the product, is technically known as "stand oil."

When the paste has been ground it is usually transferred to a mixer for thinning down, as already mentioned.

The modern process of manufacturing enamels and enamel paints consists of what is called a "building-up formula," and no single ingredient is employed without a certain specific reason.

Damar and Shellac

Both damar and shellac have the property of dissolving in their respective solvents cold, and both materials produce very pale so-called varnishes, which dry with ordinary gloss. Years ago the enamel made with damar varnish was known as China Gloss; but damar is a very soft gum, and while it can produce a good enamel in appearance, yet in course of time and in presence of certain influences, it becomes soft. Frequently it discolors pinkish, if a pale manganese drier has been used in its preparation. It is not durable for outside use and, of course, is not intended to be used in that way.

Damar varnish enamels may be greatly helped by mixing with a thin pale hard-resin varnish, but if the resin has high acidity it will likely cause the "livering" previously explained. Manilla and other resins of high acid value cannot safely be used in enamels in which zinc oxide is the pigment.

The Holland and Belgian enamels, made years ago and still marketed, are smooth-flowing enamels made of oxide of zinc and stand-oil. Stand-oil possesses great viscosity. The high luster of such enamels is very lasting, and this type of enamels is very durable and tough. However, they were slow-drying and sometimes this was against their earlier use. They had been in use in Holland for years before they found their way to Great Britain, and thence to this country. China wood oil sometimes is used now in connection with stand-oil. Refined, unbodied linseed oil, in such a mixture, tends to reduce luster and impede drying.

Varnish Paints

We now come to varnish paints. As the term implies, this form of enamel coating gives a lustrous finish by reason of the varnish contents, but simply because a coating is lustrous it is not necessarily durable, or hard and impervious to moisture—the qualities we look for in an enamel finish. The "mixing varnish," used in the making of such varnish paint, is not necessarily high grade, depending upon the class of work it is intended for. Generally varnish paints are not offered as protective coatings, except in specific usages.

Fillers for Defects—Where Lacquer Is Used

In wood finishing it is often necessary to use some kind of a putty for defects. Oil putty should be avoided where lacquer is applied. Wax is sometimes used to fill small nail holes, before woodwork leaves the cabinet shop, but this is poor practice too, because after the lacquer is applied there will be a soft spot wherever wax has been used. The use of soap for this purpose also invites certain trouble for the finisher.

Water mixed putties are the best for any kind of lacquer work. There are a number of water putties on the market; they come in dry form to be mixed as used. The putty must be mixed stiff, or it will shrink after the second coat is applied.

The finisher can make a very good putty from glue and whiting, but the glue must be thinned down so it will not be too hard to sand. Although this is a good putty, it must be used at once, or it will soon spoil. Back before the war, these water putties where reduced and used for filling open-grained woods, as the oil fillers were not suitable for lacquer work at that time.

A good putty which dries hard can be made from whiting, plaster of Paris and lacquer. This becomes very hard and must be handled carefully. Whiting and shellac make a good putty, drying hard in a few minutes. White shellac with whiting, will make a light colored putty; orange shellac and whiting will be a sort of wood color. By adding alcohol stains, this putty can be colored to any shade desired, and when dry it can be sanded smooth. Of course, where stained work is repaired, it is customary to "burn in" with stick shellac. However, the shellac and whiting putty, properly colored, can be used with good results.—J. K. Cooper.

If we do not "overcrowd" prosperity, it will be with us a long time.

The Automobile Painting Field

Calling attention to the possibilities of developing a business in refinishing motor cars, on a modest scale, and building it up to take care of a volume trade in a satisfactory and profitable manner

By R. L. Masterson

SINCE the beginning of the motor car industry, automobiles have been finished with a protective coating of some kind, to give them beauty and to increase their life by protecting them from the ravages of the elements. Originally, much the same system as formerly used for painting buggies and carriages was the vogue, but in recent years there have been many decided changes in both methods and materials. Yet there is every indication that a protective coat of some sort will be used for a long time to come to protect and beautify motor cars.

Regardless of the type of finish used, it cannot last forever, because it is constantly in conflict with the elements which would destroy the surface it protects. The sun's light and heat and many other natural agencies such as wind, rain, hail, snow, ice, fog, salt spray, dust and dirt are continually attacking the film, trying to get at the surface underneath.

In addition there are many artificially produced influences, such as acid fumes, smoke, exhaust gases, oil, grease, road tar and battery acids, which combine their force with that of the natural agencies, to attack and destroy the finish. Eventually the finish must succumb to this combined attack. Then the old finish must be replaced by a new finish, or these destructive forces will exert their energy direct on the metal and destroy it.

These are some of the reasons why a finish cannot last forever, and for these same reasons people will continue to have their automobiles refinished. And as long as there are automobiles to

be refinished there must be men to refinish them. Opportunities in the field of automobile painting are numerous.

Through the efforts of trade papers and other agencies such as the "Save the Surface" campaign and the "Paint Up and Clean Up" campaign of paint and varnish manufacturers and dealers, the public is awakening to the fact that money can be saved by keeping automobiles, as well as buildings, well painted. More cars are being refinished than ever before, and the indications are that those now in the refinishing business will have more and more of this work as time goes on.

Experience Required

While it is true that one can not become a first-class automobile painter over night, it is equally true that, with the advent of mechanical means of applying finishing materials, the job is becoming less difficult. Formerly, it was necessary for a workman to spend many months serving an apprenticeship under an experienced man, before he was qualified to completely finish an automobile. Today, much less time is required.

While experience is still a great teacher, it is possible to get our wisdom through a shorter route than formerly. In the production factories, inexperienced men are daily being taught to paint automobiles. By reading and studying the printed experiences of others and by careful application to the job in hand, together with some time spent in actual practice, one with average skill soon acquires the knack of using the different materials and tools to produce satisfactory results.

The painting of automobiles is like any other painting job in some respects, but in many ways it is entirely different from the painting of a house or the varnishing of a floor. In automobile painting, one must use many materials which are rarely used for painting other objects.

Another difference is the extreme care that must be taken to see that each coat goes on smoothly and free from dirt, sags, skipped places and other defects. There is quite a knack, too, in getting the materials on heavily enough, so they will flow or level out to a smooth surface, but not so thick as to cause runs or sags. Some experience is necessary also, to properly rub down or surface the various coatings. With average skill and a little practice, however, all of these points can be mastered.

Business Profits

Undoubtedly there is a great field of opportunity waiting for the man who can show the automobile owner that it is economy to keep his car, as well as his home, in a good painted condition. The opportunity is still greater if that man can do the actual work, or supervise others in the work of finishing automobiles.

In the larger cities many refinishing shops keep busy throughout the entire season, doing nothing but refinishing automobiles which dealers have taken in on trade for new cars. If the automobile dealer has learned that it is profitable to repaint all his second-hand cars before they are resold, then the driving public should also wake up to the fact that motorist's cars can be driven longer and traded in for more

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We have developed a line of Pyroxylin Shading Stains for use on furniture or cabinet work in connection with Murphy Kauriol Wood Preparation, our combination pyroxylin stain and filler. These pyroxylin shading stains allow you to give a uniform appearance to work into which different kinds of wood enter.

For instance, gum wood and walnut are often used together in one article. Here you would fill and stain the walnut with Murphy Kauriol Wood Preparation and use the proper mixture of Shading Stains on the gum wood to match the walnut filled effect. Then you are ready to apply your finishing coats of lacquer.

These Pyroxylin Shading Stains may also be employed to tint or thin Murphy Kauriol Wood Preparation; or they may be used for high-lighting or antiquing, where these effects are desired.

The use of these Pyroxylin Stains enables you to employ pyroxylin materials throughout your finishing operations, thus giving you a 100% lacquer finish—a most desirable result, because when you employ materials of a pyroxylin nature throughout the resulting finish is a homogeneous unit film tightly anchored to the wood. When your stain or filler is different chemically from your lacquer finish the resulting film is in reality in layers, and not knitted together as when pyroxylin materials are used throughout. Durability is affected.

Ask our representative to demonstrate these new Murphy Pyroxylin Shading Stains to you. They are available in black, dark brown, light brown, red, red-brown, yellow and green.

Murphy PYROXYLIN SHADING Stains

"If you could ask manufacturers who use Murphy varnishes and finishes on furniture, pianos, automobiles and other things, if you could talk to architects who specify Murphy finishes, and master painters who use them, you would find that all have a certain confidence in the name Murphy. This confidence is what constitutes the Murphy reputation. Murphy Varnish people are determined, come what will, they will never put out a product that lessens their claim to that reputation."

MURPHY VARNISH COMPANY

NEWARK · CHICAGO · SAN FRANCISCO · MONTREAL

money, when well painted, than when in a run-down, dilapidated condition. Men who educate the public in this respect and who conduct their business along thorough-going commercial lines, will reap the profits and at the same time be a great help in promoting conservation and economy.

Naturally, the prices for refinishing vary according to location, the size of the automobile and the quality of work; they range from about $25 or $30, up as high as $250 or $300 per car.

If one turns out only a few jobs a month by himself, or with a little help, he should make a nice salary. The cost of the materials actually going on each job is rather small; most of the quoted price is to cover labor, overhead expenses and profit. When the work is operated on a larger scale, so the volume increases and the profits on the work of several men accumulate, the refinishing business becomes very profitable.

The White Pigments

In considering the dry finely-powdered materials used in the paint industry which appear to be white in color, it might seem that there are a large number of white pigments, but many of these dry finely-powdered white materials lose practically all of their hiding power when they are mixed with the paint vehicles and, as a pigment must have hiding or "pigmentary" power, the list of true white pigments is narrowed down to five which might be designated as follows:

1. White lead. 2. Basic lead sulphate. 3. Titanox. 4. Zinc oxide. 5. Lithopone.

All of these five pigments are white in color, all of them have considerable hiding power when mixed with the paint vehicles and they are all extensively used in the paint industry.

The color of a pigment is determined by the color of the light which it reflects and, when mixed with the paint vehicles, all of these white pigments will non-selectively reflect about 80 per cent. of the light which strikes them and are, therefore, essentially white pigments.

Some of them will reflect slightly more light than the others but, practically speaking, their light reflection factors are about the same in commercial paint mixtures.—R. L. Hallett, in Paint, Oil and Chemical Review.

Last year 74 per cent of the automobiles manufactured were closed models.

Advances in Pratt & Lambert Inc.

At a meeting of the Board of Directors of Pratt & Lambert-Inc., varnish, enamel and lacquer makers, held in Buffalo, February 9, 1927, R. W. Lindsay, General Sales Manager, was elected a member of the Board.

Mr. Lindsay has been connected with the company for more than 18 years. The steps in his progressive advancement have included service as Chief Chemist, Manager of Industrial Sales, General Sales Manager and Assistant Treasurer.

Changes in Corlear Products Co.

Otto R. Trefz, Jr. has bought a controlling interest in the Corlear Products Co., Inc., and has moved the office to 2110 Fairmount Ave., Philadelphia, to which all future orders should be addressed. All accounts for merchandise shipped from New York should be paid to the old office, 459 East 147th St., New York City.

Mr. Trefz will continue the Corlear Products Co. under the same policy, with the same commodities, same quality, and same prices. There has been no change in anything except that the administrative offices and warehouse from which the goods will be shipped, will be at 2110 Fairmount Ave., Philadelphia.

SPRUANCE QUALITY

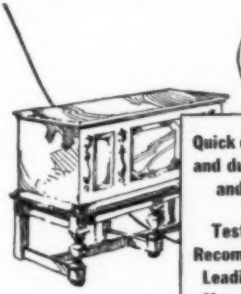
Q-E-D

QUICK ELASTIC DURABLE

FURNITURE LACQUER

9003 FURNITURE LACQUER. Highest Building Quality, Tough, Elastic, Durable, Easily Rubbed, Accurately Thinned, Ready for Use.

9013 FLAT FURNITURE LACQUER. Same high qualities as 9003, but gives a fine rubbed finished effect which eliminates rubbing.



Quick drying, tough and durable. Clear and colored.

Tested, Used, Recommended—by Leading Furniture Manufacturers.

THE GILBERT SPRUANCE CO.
PHILADELPHIA

"A FINISH FOR EVERY PURPOSE"

Will the manufacturer add more finishes and color schemes to his regular line? Will he establish a "special-finish" department to handle custom jobs, or will he leave it to the buyer to have special jobs finished at a local custom shop?

What Will Satisfy the Demand for Special Furniture Finishes?

By E. J. Clary

PRESENT tendencies in the retail furniture trade are toward the encouragement of special finishes in special lines of furniture, in spite of general antipathy to the practice, on the part of factory executives. In this matter the retailer is, to a great extent, pampering the customer.

The increase in the quantity of certain lines of white goods being stocked by retailers, is seen on every hand, especially in the larger cities. Factory executives, in general, say they cannot profit on the average special finish job, even when an extra charge of from 12 to 20 percent is made for it.

A number of factors are working to load more of these special finishing jobs onto the manufacturer. One is the present craze for the bizarre and the freakish in home furnishings, among certain types of people. The retailer finds a demand for special finishes, and he hasn't yet found a good way to meet it, except to fall back on the factory. It's a bother to him as well as the factory, but he doesn't feel that he can turn down a customer, especially when the sale unit is considerable in size.

As a matter of fact, it seems to me that if the retailer were discouraged by the factory in granting the privileges of special finishes, customers would in the end accept, within reasonable limitations, furniture stocks now on the floors of the retail shops and be satisfied with the present latitude in choice.

Something Different Demanded

Recently, a woman buying a breakfast room set, declared: "I like that set and this one, and the price is all right. But I fear that the colors you have in stock are common, or will become so. I don't want my new breakfast room to be one that is duplicated all over town. My home is just finished; we spent $55,000 on it,

ULTRA-VIOLET RAYS

Tell the Story!

Marietta Oil Stains *vs.* Ordinary Stains

Within the last few weeks a large maker of tables told us that the stain on his table legs faded badly. He was using an ordinary oil stain. It not only faded, but they could not use lacquer or Varnitro over it, as it bled through the coatings. Marietta Oil Stain overcame all the troubles. ***Under the testing lamp our stain became deeper and richer.***

THE ONLY STAINS
(outside of water)
YOU CAN USE UNDER VARNITRO OR LACQUERS
THEY WILL NOT BLEED THROUGH
THEY COST NO MORE

WE ALSO OFFER

Unusual Highlighting Stains

THEY STAND THE LIGHT

THE MARIETTA PAINT & COLOR COMPANY

Executive Office and Factory: Marietta, Ohio

Southern Factory: High Point, N. C.

We would be interested in an improved oil stain if it will stand the light and not bleed..... We are interested in a good Shading Stain..... We manufacture.....

Name.....

Address.....

Mar. I. F.

so you see, I want a distinctive note.

"Here's a sample of my draperies—peacock blue—and I want a finish that will go well with it. If you can have a set especially finished for me within three weeks, I will give you the order now; if not, I'll try elsewhere."

What was the retailer to do in a case like this? He faced the prospect of a wealthy buyer going elsewhere for an important purchase, and he knew that what the woman wanted was silly. He also knew that the factory would balk at any such speedy commission, at that time of year.

He attempted a little diplomacy—tried to sell her something else that would do just as well, or better. But the woman was obdurate.

"My decorator recommended it," she said, and she stood her ground.

The dealer did as most of them do; he took the order. So much, I overheard, but I have no record of what happened after that. However, I'm willing to bet the factory didn't make a cent on the job.

Any freak order that slows up production in a furniture factory must be turned out at a loss, and within my experience, finishers are seldom prepared to execute special finishing orders in small lots. If they do, it is a lot of bother and a lot of extra cost.

Will Wider Range Answer?

Many furniture men feel that this special finish nuisance can be largely eliminated, if the average manufacturer broadens the range of his finishes to give the buyers a wider selection from which to choose. There is a reluctancy to do this, in most cases, though a larger number of plants are increasing their surplus of white stock, in selected specialties, to provide for a certain number of special combinations that appear to be in demand.

One of the best grounded complaints of the factory finisher, in handling these special jobs, is that they often fail to suit the owner when delivered; the goods fall back on the retailer's hands, with a certain amount of reaction on the factory.

In many cases, factories are taking special finish orders of standard numbers only, on the basis of no delivery date promise, which gives them a chance to slip the stuff through during a period of slackness. Department stores are getting more requests for special finish jobs than are the straight, independent, furniture retailers, and it might not be hard to account for this fact.

The department store line is, as a rule, usually more limited. The range of finishes in selected lines is narrower. Hence the demand for special jobs.

One department store furniture buyer says:

"Our frequent orders for special finishes is a direct result of the craze for colored chintzes, cretonnes and draperies of all kinds, within the past three or four years. Women select outlandish combinations and then set out to match up the furniture.

"If our customers would first select their furniture and then match up their drapes, rugs and other accompaniments, there would be a great deal less of this special order business, which is a nuisance to us as well as to the factory."

SINCE TRADE 1846

CLOVER M & L LEAF

Industrial MARK Finishes.

VARNISHES-ENAMELS-LACQUERS-JAPANS

THIS MAY SOLVE YOUR PROBLEM

If you have need for an economical, durable foundation for your clear lacquer finish—a material which will spray or brush, dip or tumble, dry quickly, sand easily and improve the final appearance of your product, try

Flint Lacquer Primer

A Lacquer foundation for a Lacquer finish.

Because it is a pyroxylin material, it knits perfectly with the succeeding Lacquer coats.

It is being used successfully by manufacturers of case goods, tables, chairs, radio cabinets, etc.

Place a trial order and convince yourself that **Flint Lacquer Primer** is the correct foundation for your Lacquer finish.

MAYER & LOEWENSTEIN
LONG ISLAND CITY, NEW YORK

Enter—The Custom Finisher

A number of furniture retailers are meeting these requests as follows: They arrange for a local finisher to take over the job—the proprietor of some small custom shop where the customer finds it necessary to pay a pretty high price, but where he can get what he wants. In this way the store makes a prompt sale of the white stock, the customer gets satisfaction, and the factory is left out of the picture entirely. This might offer some solution of the problem, if it was generally carried out, which it is not—as yet.

A number of furniture finishers—bosses—in the factories are hard set against accepting special jobs under any consideration. The preparation for a special finish, on a set, is such that a ten percent extra charge hardly pays for a preparation.

It is also true that many retailers send in these special-finish orders with mere verbal explanations of the color and surface wanted. The finisher has to do some fancy guess work, and generally he is wrong in the eyes of the customer.

In general, manufacturers are expanding their lines to give the customer a reasonable range of finishes from which to select. The fact that the retailer's stock is often so limited as to encourage special finish orders, is beside the point.

Two Types of Black Pigments

Lamp black is a word which is much abused. Some of those unfamiliar with it use it for a great many other black pigments and in this way, while using the term for products to which it does not apply, it is apt to cause some confusion. I believe you would be interested in having me point out to you that there are two types of black pigments.

First, the natural black products which are used as paint pigments. In this class you have pulverized coal, graphite and mineral blacks, which are also called black oxide of iron or ferric tetroxide.

All of these products are mined, washed and ground to the desired fineness to make them suitable as a paint pigment. Due to their poor color and tinting strength they are seldom used except as a black in iron fillers or cheap iron paints.

Graphite is mostly used as a pigment which has a positive value in anti-corrosive paints. I will not say much about this class of blacks other than the fact that they, like the artificial blacks, owe their color to the carbon they contain. (Excepting mineral blacks, of course.)

The artificial black products which are used as paint pigments are by far the most interesting. In this class you have the lamp blacks, bone blacks, ivory blacks, drop blacks, vegetable blacks, carbon or gas blacks, black toners, and lakes, including extract blacks and aniline blacks, vine blacks, artificial graphite, and of lesser importance, acetylene and benzol blacks as well as charcoal. —Luther Martin.

At Pittsburgh Lacquer & C. Co.

S. Rush Montsier, Jr., formerly assistant chief chemist of the Pittsburgh Lacquer and Chemical Co., has been transferred to the sales organization and will be responsible for the sales of Western Penna. and Eastern Ohio.

PRESTIGE comes to the manufacturer who turns out a quality line of merchandise. That is why more and more lacquer users adopt Vitraloid Wood Lacquer No. 2546. They find its use an easy and economical way to add durability, beauty, value and quality to their furniture.

VITRALOID WOOD LACQUER No. 2546

This utilitarian wood lacquer may be used with equal facility to produce the popular antique effect or the bodied finish like a rubbing varnish job. It is ready to use, may be applied with perfect safety directly over stain or filler, and another cheering fact is that it costs no more than a good rubbing varnish. The finish produced is unaffected by printing or moisture, and it retains its original newness even after a long period of hard usage.

A generous no charge sample of Vitraloid Wood Lacquer No. 2546 is yours for the asking. Write today for a testing quantity together with prices and complete information.

PRATT & LAMBERT-INC.

Manufacturers of

VARNISHES ENAMELS LACQUERS

84 Tonawanda St., Buffalo, N. Y.

New York Buffalo Chicago San Francisco

Bridgeburg, Ontario

Why the Finish Crazes and Cracks—I

This installment of a two-part article explains in detail several causes of a puzzling trouble with which practically all finishers, salesmen, dealers and ultimate users have had to contend

By Chas. Blandford

HAIR LINES, "checks," and "cracks" are so familiar in finishes on furniture, pianos, automobiles, and many other articles that there is little need for a definition or description of them. Every one knows a checked finish when it is seen. Hair lines, checks and cracks are terms used mostly to describe the degree of deterioration. When the deterioration has just started the defects are usually small and are referred to as "hair lines."

In the more advanced stages these hair lines become larger and more pronounced, running into each other and forming a checkered effect which is called "checks." When the checks open up quite wide, or the hair lines run in more or less straight lines that are quite visible, the defect is referred to as "cracking." "Alligatoring," "crazing," and similar terms also are used at times to describe these defects. All of them usually have an origin that can be traced back to a few causes.

Many Factors to Consider

It is doubtful if the time will ever come when absolutely all troubles of this kind are eliminated in finishes. There are many factors that exert an influence over the durability of a finish, over which the paint, varnish or lacquer manufacturer has no control.

For example, all the materials used may be of the very best quality, yet the finish will not be permanent if the surface on which they are applied has not been properly prepared to receive the finish, or if the various coats are not properly applied and dried. The surface, whether of wood or metal, must be clear and free from moisture, oil, grease, dirt, rust and other defects. Wood surfaces must have the proper moisture content, being neither too dry nor too wet; otherwise the subsequent changes of moisture content may spoil the finish.

Even the best of finishing materials and the best of workmanship may still fail to give satisfaction in the life of the finish if the ultimate user of the finished article, either purposely or unknowingly, submits the finish to conditions which promote rapid deterioration. All of these are conditions over which the maker of the finishing materials has no control. Really, a satisfactory finish depends as much upon the conditions under which the materials are applied, upon the methods of application, and upon the treatment of the finish by the ultimate owner, as upon the quality of the materials themselves.

A Frequent Cause

The most frequent cause of checking or cracking lies in the

You wouldn't use automobile pliers to adjust a watch

MANY of the finishes which you are using were, in the past, good finishes and are still, no doubt, "good enough." But after all, the past has gone by and in the present day a "good enough" finish can hardly be called a sales asset for your line.

If you are searching for the finishing material which will best bring out the beauty of your line and will keep on bringing out that beauty long after ordinary finishes have become dingy, you will come to Duco.

Either in colors or clear, Duco will give you that hard, tough, durable finish which improves with age and polishing.

DU PONT

E. I. du Pont de Nemours & Co., Inc., Chemical Products Division, Parlin, N. J., Chicago, Ill., San Francisco, Cal., Everett, Mass., Flint Paint and Varnish Limited, Toronto, Canada.

soft or not thoroughly dried undercoats. Even when the utmost care is used in preparing the surface and in applying the coats, the danger is not entirely eliminated unless each coat is at least as elastic as the one or more preceding it, and unless each coat is thoroughly dried all the way through instead of merely on top.

It is well known that all paint and varnish materials dry by a combination of the evaporation of the solvent portions and oxidation of the non-volatile oils and gums. Within a short time after the material has been applied the volatile thinners have evaporated to a great extent and the finish becomes sticky or tacky. From that point on, the drying proceeds by the oils and gums absorbing oxygen from the atmosphere and thus being converted from a liquid to solid form.

Most paint and varnish materials have a tendency to dry from the top down, that is, they will harden on top within a few hours and yet be more or less soft underneath, requiring considerable time before they are hardened through the entire thickness of the coating. If another coat of finishing material is applied before the oxidation of the previous coat has proceeded far enough, the new coat begins to harden from the top down, and soon forms a dense layer which prevents the oxygen from easily getting to the bottom of the first coat of only partially-dried material.

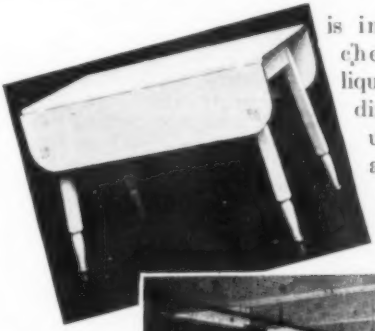
If the last coat stands long enough it will harden through and through, and yet the bottom portion of the first coat may not be thoroughly dried. If the finish is subjected to a change in temperature, or if the amount of moisture in the wood is increased or decreased there will be an expansion or contraction of the wood and the finishing material will have to contract or expand also. Now the under portion of the finish that is not thoroughly dried will expand or contract over a greater distance, with a given change in temperature, than will the hardened top film—without cracking. As a result, the elastic limit of the top film may be exceeded and checks or cracks will appear.

The Change in Volume

Regardless of whether any great changes in temperature or moisture content take place, there is danger of checking or cracking developing under the above conditions, due solely to the fact that as the undried portion of the film becomes dry it will change in volume. Since the top film is hard and already under a strain, similar to that of a rubber band drawn tightly over a wooden surface, it may not be elastic enough to change shape with the under portion of the film, and will be broken in pieces as the under portion changes in volume.

A good example of how cracking is caused by a change in volume of an undercoat, after the top film has become hard, is the drying of clay mud on a river bank under the hot sun. The top film of mud dries first and is baked very hard by the sun. As it dries it shrinks in volume. Later, as the drying proceeds downward, the top film of hardened mud is no longer sufficiently elastic and it cracks into sections of irregular size and shape, the cracks becoming larger and deeper as the drying proceeds. The cracking of paint or varnish is somewhat similar to this cracking of baked mud, except that in the case of the paint or varnish, oxidation of

Pecora Cuticle Enamel



is impervious to acids, chemicals, and similar liquids which destroy ordinary enamel. It can be used on wood or metal and covers seven hundred feet per gallon—one coat.

Cuticle Enamel is the ideal finish for kitchen tables, bathtubs, and all other articles that are subjected to hard wear.

Stands use and abuse—

If you want an air drying enamel for bathroom fixtures, hospital equipment, breakfast room sets, kitchen cabinets, toys, etc., that positively does not turn yellow—and that stands worlds of abuse—try our Cuticle Enamel.

We have been gradually improving this product for 65 years—we are enamel specialists. Liberal sample for the asking. Can be furnished to dry with a high gloss, egg shell or flat.

PECORA PAINT COMPANY

3rd. & Sedgley Streets

Established 1862 by Smith Bowen — Philadelphia, Pa. — Incorporated 1911

the oils and gums is responsible for the hardening effect, while the mud becomes hard and non-elastic principally through the evaporation of the moisture by the hot sun.

Any condition that causes a portion of the undercoats to be softer or more elastic than the top coats, usually results in cracking. Improperly dried coats will cause cracking, as mentioned above. If the coats are heavier in some spots than in others, much the same effect will be produced in those same spots. If the top coat of varnish or paint contains less oil or is "shorter in oil," or less elastic, than the bottom coats, exactly the same condition exists.

Heavy Coats a Cause

Cracking or checking often can be traced to a desire to apply the finishing material too heavily. It is better, from the durability standpoint, to apply three thin coats of material than to put on two heavy coats. Where a heater is used on the spray booth for warming the varnish before it is applied, there is often a tendency to apply the varnish too heavily. In either case, the varnish may not harden through properly, and as it dries out thoroughly later, checking and cracking may develop. Lack of proper drying conditions, such as the proper temperature and relative humidity, may prevent the coating from hardening through. This will give trouble later.

Dryness of Wood Veneer

Sometimes improperly dried veneer is the cause of checking or cracking. If the veneer is too dry at the time it is finished, it may absorb more moisture from the air after the finished article is put in use. On the other hand, if the veneer is not dry enough at the time of finishing, it will lose some of its moisture later. In either case there will be a change in relative volume with the change in moisture content; this change may be sufficient to disrupt the hardened finish and cause checking or cracking.

Unprotected edges of wood panels may absorb enough moisture during the rubbing process to cause checking, or the wood may take on moisture from damp cellars or from other sources, through unprotected edges of the wood, after the finished article is in the home. In this case, however, the checking or cracking usually extends only a short distance back from the unprotected edges, and the center of the panels may remain unchanged.

Next month—More causes of checked and cracked finishes, along with a new and remarkably effective lacquer treatment which saves a refinishing job.

Avoiding Damage to Finished Products

In plants where machinery is in motion, considerable damage is sometimes done to goods, due to the drip of overhead oil. The plants may be well managed and equipped, but some little occurrence that is hard to anticipate will bob up to spoil valuable goods.

Textile mills that have line shafting, experience some trouble. While there may be no hangers over the machines, there may be hangers or loose pulleys over aisles or areas where goods are stored temporarily. A boy, pushing a truck loaded with finished bolts of cloth, may find that a drop of black oil suddenly darkens the pile in front of him—

Aren't you sick of reading—

"Ours is the best"

?

It's a broad claim indeed to say, "Ours is the best"—it's so often untrue when applied to any product. The best is a matter of opinion.

Regarding lacquers, for instance—we know that ours is the best *we* can make—we know that it does a better job than any other lacquer we have ever encountered—but we won't say it is the best there is. Perhaps it isn't.

One thing we will say, however, is—if the other fellow is making a better lacquer, he is producing a corker.

Our suggestion to you is—test ours and the other fellow's—and may the best one win.

Write us

"No Tampering with Quality"

The

ROCKFORD VARNISH

Company

ROCKFORD, ILL.

and the immediate loss runs into many dollars.

For this reason the so-called "oilless" bearings have found high favor in textile mills. These impregnated wood bearings need no oil, and they contain no grease to soften up and drip, unannounced, during the hot days of summer. They are also in extensive use in factories making food products, where a single drop of oil will spoil a whole batch.

Recently, an over-zealous employee damaged over 1000-ft. of the finest mineral-tanned leather belting, because he had so thoroughly lubricated the machine that the oil (black oil) dripped on the belt as it was passing to be cut and measured. Though uninjured so far as utility is concerned, the belting could not be sent out as perfect; it had to be sold as "second," merely because its appearance was marred.

Woodworking factories are no exception to such losses. A drop of used oil on a finished board leaves a mark that spreads and spreads, and ultimately causes rejection of the piece. In New England, where the mill equipment is older, and where the line-shaft is still in greater evidence than the group or individual drive, it is common practice to place catch pans under the overhead countershafting above planers and other machines, where quality lumber is passing through for the last time.

There may be no hangers over the path of the boards and no pulleys in line to throw oil, but it has been found that oil will trickle out along a shaft standing idle, and that drops that settle on the shaft in that way are thrown off when the shaft is started.

A firm of monument workers suffered considerable inconvenience, and a telephone company was put to heavy expense because of oil that dripped on finished stones. These monuments were stored in the yard, from the sidewalk line back. Some were polished and lettered, ready to be placed, others were merely polished. Workmen for the telephone company were stringing a cable on poles along the street and, to draw the cable through more easily, they had greased it with oil drained from automobiles.

The moderate wind that was blowing at the time spattered oil drops over a large number of the marble stones. This damage was not noticed until many stones had been stained. Although State aid was invoked, no way of completely effacing the damage was found. All of which goes to show that it is just as important to preserve an industrial finish, as it is to produce it.—D. A. H.

Ernest W. Heath Passes On

Ernest Warren Heath, long identified with the paint and varnish industry, passed away during the morning of January 9th at his home, 4940 Woodlawn Ave., Chicago, following an illness of just a few days. His death came as a shock and a blow to his great host of friends among paint and varnish men.

Mr. Heath was formerly with Heath & Milligan Mfg. Co. but since 1920 he had been with the Sherwin-Williams Co.

J. N. Chamberlin Dies

Jeston N. Chamberlin, age 46, Secretary of Beckwith-Chandler Co., of Newark, N. J., died February 6th at Jefferson Hospital, Philadelphia, Pa., following an operation the previous Friday.

Mr. Chamberlain has been connected with Beckwith-Chandler Co. 14 years as Secretary in charge of railroad sales. He is survived by Mrs. Chamberlin.

L-109
flat lacquer

WHAT L-109 has done for others it will do for you. We will ship you a drum or five gallons at drum price, and if it does not please you, any unused portion may be returned at our expense.

ones- abney ompany nc, *ouisville, y.*

Here's a Finish That's

"NOT A
DUST CATCHER"

for

Attractiveness
and Economy
Coat Your
Products With—

Lucas

JACK FROST
CRYSTALLIZING FINISH

Aside from the attractive appearance, is the saving of heavy losses ordinarily attendant to stripping and refinishing products not passing rigid inspection.

Dirt and surface irregularities are not noticed in Jack Frost Crystallizing Finish and greater production is assured. Many colors. Size of crystals controllable. Application by spray. Baking as per standard practice. Made in CLEAR and BLACK. Colors obtainable by using a ground coat of the shade selected, followed by a coat of Jack Frost Crystallizing Finish Clear.

Write our Industrial Dept., W-3, for sample panels and information regarding your special needs.

John Lucas & Co., Inc.

Paint and Varnish Makers Since 1849

PHILADELPHIA

NEW YORK PITTSBURGH CHICAGO BOSTON OAKLAND
And Local Distributing Points

Why Success was Missed

The Factory with Secret Processes

Why an old established manufacturing concern failed in its expensive and elaborate efforts to enter a new field in which competitors are doing a very profitable business

By D. A. Hampson

AN INSTANCE of the dire results that may be expected from a narrow-minded, non-progressive policy is found in the recent closing of a factory near Philadelphia—killed in the business world as the tide of modern methods swept them high and dry on the banks of failure. Let us say their line of work was radios—which it wasn't, but it will serve the purpose of this article, whereas to state the actual product would be tantamount to naming the unfortunate men concerned.

This was an old established concern which had built up a national market for its products; and with good reason, for the founders and their children had been men of genius who could foresee and develop. Patented processes had still further enhanced the leadership of the products, which were also patented, as far as possible. The firm's products had always been quality goods, both in materials and finish.

Entering New Field

Four or five years ago they decided the radio field was worth tackling, so they erected a manufacturing plant on their vacant land. But first they must perfect a radio, and equipment for its manufacture. They were still doing this when the peak of the present season's business (and many would say "of the entire radio game") found them still experimenting, and as yet not a single cent coming in. Finally it was decided to close what had been nothing but a sink hole for funds acquired in another line.

Now, with an abundance of capital, a going concern can enter practically any field related to their original one and, if they market a good product, get a reasonable share of business. This is what these people figured on. But instead of making that article (with such improvements as they could devise) in a standard way, they chose to develop methods of their own.

The Curse of Patents

A large part of their work on the new radio was woodwork which could and should have been produced on standard machines in a conventional, modern way. What they wanted to do, however, was to do this automatically, and to perfect machines that they could patent and thus shut off rivals from realizing the benefits they expected to obtain. Plenty of persons have had that same idea.

The company did take out some patents, such as one for a sander that would produce a satin finish on cabinet panels delivered on a conveyor, and others for work on smaller parts. Wonderful machines—at least so the boys who

worked there whispered, for no one was allowed to see them. But actually these special machines produced no more work, nor at any better price, than standard woodworking machines, when the development cost was figured in.

And then there was the matter of the coatings. Panels, cabinets, small parts, metal pieces—all these had to be dipped or sprayed and put through the various intermediate processes. No conventional methods were adopted. The management didn't want to do things as all the others were doing them, parrot fashion, so they stumbled on in their own way with indifferent results.

Salesmen Shut Out

In a general way, these conditions were known, and both salesmen and demonstrators called at the plant. These individuals, of course, were sure they had the correct finishes for that particular work, and they fairly frothed at the mouth in their vain attempts to get inside to show what the stuff could do. Some of them made sales but none of them got inside. Results from the different finishes were varied—some days good and some bad; sometimes they would dry hard and even, while at other times they would be sticky and show bubbles.

Salesmen for reputable concerns were often given sample parts to finish, which in due time they returned finished as nearly perfect as science and specialization could accomplish. But the factory never did as well with its own men using the same materials.

One demonstrator pleaded with the management for an opportunity to go in and show the men how to apply his finishes.

"I can show them how," he declared; "they can't be expected to do this thing correctly without instruction and practice. I know approximately what you are doing and why you don't get results; it's in your methods. Why, I couldn't begin to do your work here in the office, because I don't know anything about it. The same is true of your men who are trying to put on finishes, and by methods that are equally unknown to them. With me, it's been a life work and I am sure I will not fail to get results that will satisfy you."

Yet, this same man was turned down on the excuse that they had patented stuff in there that they didn't want other people to see. He was a man of 30 years experience (largely practical) extending from the old linseed-oil days right down to modern lacquers, finishing everything from automobiles to toys.

Styles changed and "standard" methods improved. Meanwhile this concern with the valuable patents was losing time and money. Competitors, however, chose to be more liberal with visitors—especially salesmen and demonstrators—and were not above learning from others; they made use of the latest materials, equipment and methods available for the common good of the industry and devoted all their efforts toward using the facilities and knowledge so acquired to the very best possible advantage. As a result the products they manufactured so efficiently and economically were entirely satisfactory to the buying public, which is the final judge.

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We will display our goods at our expense, and give you practical advice. How best to use.

White No. 1 Lacquer

COLORLESS

Clear and transparent, looks like a coat of celluloid on work. Can be polished.

FINISHING ROOM FAVORITES

No. 115 Pale Rubbing

The reliable quality varnish that held its own so many years in the face of keen competition.

SUN VARNISH CO.

Louisville, Ky.

Finishers, You Must Know These Facts!

Why Viscosity Tests Are Important—I

First installment of a two-part article which explains clearly what is meant by viscosity of paints, varnishes and lacquers; what to make tests with, and how to judge the results shown by the tests

By W. H. Martindale

IN THESE DAYS of scientific methods, it is becoming more and more common for users of paint, varnish, and lacquer materials to set up physical and chemical standards of quality, as an indication of the type of finishing material best suited for the particular requirements of the work in hand. These standards have a certain value as a basis of acceptance or rejection of finishing materials furnished by paint, varnish and lacquer manufacturers—once the proper limits have been established and the source of supply remains the same—but there is a tendency to over-estimate their importance as a guide to the quality of a paint, varnish, or lacquer, or its suitability for a specific use.

What Viscosity Is

Viscosity is defined by Webster as the "resistance offered by a fluid to the relative motion of its particles," or, the "internal friction" of a liquid. From this standpoint the viscosity of a finishing material is important, since it determines to a great extent its ability to be brushed, sprayed or dipped, as well as its flowing and leveling qualities after being applied.

A material with a low viscosity will flow better than one with a high viscosity, because of less internal friction. Sometimes a high viscosity is desirable; at other times a low viscosity is better suited to the particular requirements of a finishing problem.

The impression was established some time ago, unfortunately, that viscosity or "body in the can," is a desirable feature in a finishing material. Apparently, it was thought that the more viscous a material might be, at a given price, the more value one obtains for his money, because the material must be reduced to a greater extent before it is applied. This may not be true, especially in the case of lacquer materials. With the advanced methods used in the manufacture of lacquer, it is now possible to make lacquers that give more thickness of film on the work, with little or no reduction, than many lacquers which are so viscous that they must be reduced considerably before they can be forced through a spray gun. The same holds true, in a general way, with all types of finishing materials. The viscosity often gives no indication of the total quantity of solids in the material, nor its ability to deposit a thick film on the work.

It is false economy to figure that because a given product can

"IT"-at last

A LACQUER that is right

AMONG finishers it is an open secret that the lacquers hitherto available have failed to measure up to standards required by the industries. Also, it is agreed that the necessity for securing an ideal lacquer has become acute, due to the increasing preference of the public for this form of finishing.

Now—after ten years of exhaustive experimentation—the lacquer nearest perfection has arrived. This new finish is GIBRALTAR. We state unreservedly that GIBRALTAR Lacquer is unapproached in its combination of desirable qualities.

You will find that GIBRALTAR Lacquer gives a finish that is hard as a rock, unusually durable, remarkably quick drying; that it takes a high polish and holds it, is non-blushing, non-peeling, and non-pin-holeing. GIBRALTAR Lacquer is supplied in a complete range of beautiful colors. In short, both your production and sales departments will benefit by its use.

We sincerely believe that it is to your advantage to send for further information and samples of GIBRALTAR Lacquer. No obligation of course; clip and mail the coupon.

GIBRALTAR LACQUER CO., Inc.

15 FORREST STREET, BROOKLYN, N.Y.

I am interested to know more about GIBRALTAR Lacquer. Without obligation to me, you may send samples and further information.
C-3

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To GIBRALTAR LACQUER CO., Inc., 15 Forrest Street, Brooklyn, N.Y.

be reduced at the rate of two parts to one part of thinner, it is cheaper than another product which can be applied "full-body." This may or may not be true, depending upon the other characteristics of the finishing material.

Usually the object in applying finishing materials is to build up a film of sufficient thickness to give the necessary protective and decorative properties demanded in that type of finish. If this film can be produced in two coats of a full-strength liquid, where three coats of a reduced material is required, the two-coat material will often be the cheaper to use, even though it may cost more per gallon than the three-coat material. The saving in labor and total gallonage of material to produce the finish, will more than offset the difference in price.

Function of Thinners

It should be remembered also, that thinners are usually added to finishing materials merely to aid in applying those materials to a surface. These thinners are volatile, and are not present in the final film on the work. If more thinner is used in one case than another, it often means that more money is being thrown into the air in the form of thinners, and a lighter film is being deposited on the surface, than if a full-strength material were applied.

In judging the ultimate cost of a finishing material, therefore, the original cost per gallon should not be considered alone. The number of coats, the labor cost, time and overhead, total quantity needed to produce the finish, quality of the dried film, and many other points should be taken into consideration.

It is a mistaken idea to demand that all materials of a given type have the same viscosity. It is possible to manufacture paint, varnish or lacquer products from a variety of raw materials and by a great number of processes—all of which have some bearing on the viscosity and specific gravity of the finished product—and still get the same results on the work. For this reason it is not proper to expect all suitable products to fall within certain limits that may be found best for an individual material, and still possess, in the proper degree, the still more important properties of flowing, drying, toughness, durability, luster, or other qualities that may be essential to the work at hand.

A Checking-Up Test

The most important use of a viscosity test is in checking up the quality of a given product, as obtained from a given manufacturer, after that product has been proved in actual tests to be suited in other respects for coating a given object under a given set of conditions. So long as the same raw materials and the same process of manufacture are used, the viscosity should remain approximately the same.

The limits should not be set too closely, however, because of certain unavoidable variations in the physical properties of many raw materials used in the manufacture of paint, varnish and lacquer products. While all manufacturers of reputable goods keep an accurate check upon the purity and uniformity of their raw materials, it must be remembered that many of these materials are natural products, which vary to a certain extent.

It is not possible to force na-

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DURO finishes represent a standard, recognized line of Enamels, Lacquers and Undercoatings that have won an enviable reputation for quality in nationally known furniture lines.

BACK of DURO Finishes—a new and modern factory, a well-trained and skilled organization, color harmony and design advisory service, and traveling representatives who know correct finishing and progressive handling methods.

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ture to maintain absolute uniformity in her products; the paint, varnish or lacquer makers must accept them as they come, provided they are within certain reasonable limits, and so handle them as to get a manufactured product that is uniform.

(To be continued)

Insist On Quality Finish

It is not uncommon to find furniture dealers telling us that design and finish are two essential matters in the selling of furniture. If this is correct, and I believe it is, then the two most important phases in the manufacturing of furniture are as stated above.

We are particularly interested in one of them—finishing. I have often wondered if the finishing end of the whole manufacturing business has not been frequently under-estimated. It is known that poor construction can be covered with a good finish and this, sometimes, is a reality.

I believe it is impossible for any manufacturing concern to lay too much stress on the finish of the goods, unless the products happen to be so cheap that the finish is not essential. However, in writing this article I have in mind particularly artistic products, where finish is a prime consideration.

To emphasize the importance of the finish on some goods, I might mention that one manufacturer of high grade office furniture—much of it custom-built—sold 25 percent more furniture through advertising the excellent lacquer finish on his goods. It gave such a talking point for his product that the above increase in business was believed to be due largely to the fine lacquer finish.

But to come to a more important part of this story, I wonder if the finishers themselves realize what an important part they are playing in the manufacture of their firms' goods. If all foremen finishers would talk quality to the manufacturers of whatever goods are being made, and if all finishers would work together in such a great movement, cheaper finishes would soon come to an end.

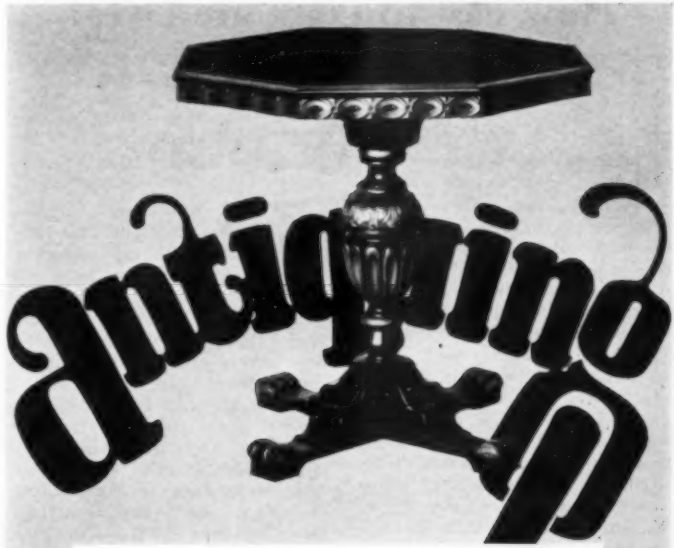
For example, here is what happened in one factory: A certain furniture manufacturer came to his foreman finisher and declared that costs must be cut. The finisher, being accustomed to doing quality work, asked why the cut must be made in the most important department—finishing. About all we hear nowadays is, "How can we cut finishing costs?"

Well, the manufacturer of desks raised his costs when he put on a quality lacquer finish, but he sold 25 percent more goods. Perhaps it pays.

Let us forget a little about lower finishing costs; take out the cut in some other department, and give the goods a chance to bear a quality finish.—J. C. H., Jr.

Harry J. Lindeman & Co., Now Called V. J. Dolan & Co.

The firm of Harry J. Lindeman & Co., which specializes in the manfacture of stains, fillers, lacquers and general lines of wood finishing supplies, will hereafter be known as V. J. Dolan & Co., Chicago, Ill. The change in name does not represent any change in the personnel of the company, as Mr. V. J. Dolan has, for the past two years, been conducting the business, Mr. Lindeman having affiliated himself with Florida Real Estate interests. Mr. Dolan's experience in the line dates back approximately 15 years.



YOU will find our method of shading with Brown Lacquer Glazing makes the antiquing of furniture perfectly easy, and imparts that evenness of tone so sought after.

This method followed with Gravarco 1009 Clear Lacquer and Gravarco 1022 Flat Lacquer produces the most durable and economical finish possible in the modern practice of lacquer methods.

Our finishing department can be of assistance to you in any finishing room problem. Why not write us about it?

GRAND RAPIDS VARNISH CORPORATION

Main Office, Factory and Studio at
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Los Angeles Chicago Jamestown High Point

How Fast to Light are Dyes?

Revealing information of interest and value in regard to the relative color fastness of various materials used in the make-up of dyes and stains for wood finishing

By George A. Prochazka, Jr.

"HOW fast to light are dyes?" This question can only be answered by first setting up another query, namely, what dyes can be used for wood finishing? To develop this thought the mind must get away from the minor amounts of aniline colors used in wood finishing and see the subject in its broadest aspect.

As the textile industry uses most of the dyestuffs, colors primarily are developed to meet its needs, and are classified by using its methods of application as an attribute. The table given below names these classes and shows the importance of each from a consumption standpoint. It is interesting to note that one vat color, indigo, accounts for nearly 30 percent of the total consumption; one direct, one sulphur, and one vat color account for half, and only thirteen colors for two-thirds. In other words, only one-third of the total market is left for the other 300 odd colors manufactured.

Classification of Dyestuffs

Kind	Percent of Total Consumption
Basic	5
Acid	13½
Direct	21½
Mordant Chrome Developed	5½
Vat	32
Sulphur	21
Miscellaneous	1½
Total	100

Of the ten classes, the second one—acid dyes—furnishes practically all of the colors used to make water stains. The basic and miscellaneous dyes supply the spirit soluble colors of commerce.

The vat dyes are complex bodies, faster to light than any other known coloring material. This type is insoluble in water and must be treated with chemicals to effect solution; but unfortunately, the expedient results in a highly alkaline bath, harmful to wood. In spite of the great fastness to light displayed by individual colors in the last six classes, their uninviting methods of application keep them from being used as wood stains. It is now clear that only certain kinds of dyes have characteristics suited to water staining.

The original question now can be answered effectively, for only acid dyes need be considered. A table of self colors, each a definite chemical compound with its own characteristic chemical and physical properties, shows the dyes commonly used to prepare mixtures needed to get walnut, mahogany and similar shades.

No mixture can be faster to light than its poorest constituent. A survey of all the acid colors used does not reveal any colors, in other hues, faster to light than those in the tabulation—in fact, they seem to be fairly representative of the general situation.

Table Reveals Facts

A few other facts brought out by the compilation are worthy of comment. The code numbers definitely identified a dye according to two large published tables in

There are Lacquers And Lacquers

THE PERMANENT
BERRYLOID
HIGH LUSTER LACQUER

IN the brief span of a few years lacquer has definitely established itself as a leading industrial finish.

Now comes the period of scientific investigation to determine *which lacquer* best meets specific requirements.

Throughout North America and Europe comprehensive tests by individual manufacturers are resulting in the specification of Berryloid.

Responsible for this is the indisputable fact that from almost every standpoint careful analysis proves the outstanding superiority of this remarkable finish.

Among prominent new users of Berryloid is Kelvinator—"Better—Always Better."

BERRY BROTHERS INC
Varnishes Enamels Stains
Walkerville, Ont. Detroit, Mich.

which revealed compositions, determined properties, customary uses, etc., of every known dyestuff have been listed. Monumental reference books they are. The light fastnesses are for wool, to which the color has been more firmly fixed than is possible with wood.

Wood is not dyed in the sense that this word is used in the textile industry, for it could not go through the necessary chemical treatment and keep its shape. But whereas these tests are for dyed wool, stained wood is always protected from atmospheric conditions by a covering coat of wax, shellac, varnish or lacquer. It is, therefore, not likely that corresponding tests made with the proper materials would show substantially different values.

Average wholesale prices have been given because price statistics are always of interest; but in using such data it should not be overlooked that dyes vary in covering power and shade. Naphthol green probably owes its superior fastness to its different constitution in which an iron salt plays a conspicuous role. Careful study of the table shows just how fast to light dyes really are.

Key to Light Fastness Numbers

Dyed wool is exposed in the open air facing south for one month in the summer.

1-w. No perceptible alteration after one month.

2-w. Slight alteration after one month.

3-w. A distinct loss in shade after one month.

4-w. Considerable alteration after 14 days.

5-w. Considerable alteration after 14 days, and completely faded after 28 days.

Rowe's Color Index and Schultz Tables present practically identical information on this subject.

Every spray gun is provided with two points of connection. The air inlet and the material inlet. The larger connection usually designates the point at which the material cup (either gravity or syphon) or the material pressure-feed hose, should be attached.

It is essential that the temperature of the finishing room be constant. This is especially true in the Winter and Spring when quick changes in temperature are very likely. Varnish applied in a chilled room or on a cold surface has a tendency to check or crack, and does not flow evenly.

Table of Water Soluble Acid Aniline Colors Frequently Used For Wood Stains

Color Index Number	Schultz Number	Name U. S. Census 1924	Fastness to Light on Wool	Ave. 1924 Wholesale Price U.S.Census	Remarks	
252	227	Brilliant Crocein	2w	*	(Red)	$1.00
31	42	Amido Naphthol Red G	2-w 3-w	.57	(Red)	
79	82	Ponceau 2 R	3-w	.55	(Red)	
179	163	Azo Rubine	2-w 1-w	.79	(Red)	
185	169	Cochineal Red	2-w 3-w	*	(Red)	.70
176	161	Fast Red A	4-w 3-w	.71	(Red)	
151	145	Orange II	3-w 2-w	.33	(Orange)	
138	134	Metanil Yellow	3-w	.72	(Yellow)	
10	7	Naphthol Yellow S	4-w 5-w	.95	(Yellow)	
235	213	Fast Brown	*	1.06	(Brown)	Fairly fast
246	217	Agalma Black 10B	2-w 3-w	.64	(Black)	
865	700	Nigrosine Blue Shade	4-w 3-w	.48	(Black)	
5	4	Naphthol Green	1-w	*	(Green)	1.25

*No definite information available.

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HAVE you ever considered using *Color* as a definite method of increasing your sales? Many manufacturers have done so with great Profit to themselves—manufacturers producing a wide variety of products, from Automobiles to Filing Cabinets, from Street Cars to Pencils.

Because Color plays so important a part in selling any product, the Valentine Technical Staff have studied the subject of Color with great care and a wealth of Color Knowledge is now available.

Technical Consulting Service

Valentine & Company will be glad to cooperate with any manufacturer in applying these Color ideas to meet specific needs. Anyone who wishes to avail himself of the services of The Valentine Technical Color Staff is invited to write to Valentine & Company, 456 Fourth Avenue, New York, for further information.

VALENTINE & COMPANY

New York, Chicago, Boston

Facts About Linseed Oil

These crisp and interesting notes reveal important facts about a material which nearly every painter and finisher uses, and which should be understood thoroughly to be specified, ordered and employed intelligently

By Russell W. Brandt

LINSEED OIL can truthfully be called one of the most essential constituents of our present day paints. Were it not for this oil, which possesses peculiar drying properties, we probably would not have as durable and as satisfactory paints as we now have. A little sketch on linseed oil is very interesting when one stops to consider just what steps and processes take place in order that we can get this important material so easily and so abundantly.

From Flax Plant

Linseed oil is obtained from the seeds of the flax plant—originally found in Asia, but now cultivated in many countries of the world. This same flax plant is also the one from which are obtained fibers for weaving a cloth that we know as linen. Unfortunately though, oil and fibers cannot both be used from the same plant. In order to get good oil, the plant is left until the seeds ripen; then the seeds are harvested and by this time the fiber is unfit for spinning purposes. Argentina is the principal seed-raising country, followed next in the order named, United States, Russia, India and Canada.

Extracting Oil

The most common method of extracting oil from the seeds is by crushing or grinding the seeds with steel rolls. Great pressure is brought to bear upon the seeds as they are ground, so that the minute oil-bearing particles will be broken and forced to liberate the oil.

The ground meal is then "tempered" by subjecting it to a heat of about 160 to 180-deg. F., agitating the meal and then using hydraulic pressure to press out the oil. All but about five to seven percent of the oil is pressed out of the meal, using about 3500-lbs. of pressure per square inch. The resulting cake of meal is used as a cattle food.

This tempering of the oil, by heating, breaks up the oil-bearing cells and tends to dissolve their gelatine-like coating. It also tends to coagulate the sediment-forming particles in the seed, thus making it easier to filter off the oil.

This crude oil still contains more or less meal in suspension and also sediment-forming material called "foots." To remove these "foots," the oil is cooled, filtered through presses which remove the suspended matter, and then it is stored in tanks where the "foots" settle to the bottom. This is now the "raw linseed oil" of the paint industry.

What Boiled Oil Is

Boiled linseed oil does not mean that the oil has been boiled as one would boil water, because linseed oil does not boil that way. When the oil is heated to too high a

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NEWCOMB

SYPHON VENTILATED CABINET

THE "NEWCOMB" GIVES YOU everything you could want in a spraying cabinet and much more than you had thought possible.

Let us tell you about our latest and best development; the fan with direct connected motor, independent of booth, with rear of booth fitted with reclaiming chamber and baffle-doors.

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Dust Collecting Systems 527 Monroe Ave. Grand Rapids, Michigan

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that can
can be finished Better *with*

A GLOWING depth of color and a rich, mellow softness are typical of Egyptian Lacquer. Metals take an amazing warmth and lustre—woodwork reveals unsuspected beauty of grain and texture when Egyptian Lacquers are used.

We invite you to try this simple test: Take two identical articles. Finish one with ordinary lacquer and the other with Egyptian Lacquer. Then decide which you would choose if you were the buyer!

There's nearly half a century of skill and experience behind Egyptian Lacquer finishes. No other lacquer so happily combines present beauty with lasting satisfaction. Our Service Department can fill any unusual "prescription."

The Egyptian Lacquer Mfg. Co., Inc.
90 West Street, New York

Completely equipped branches in charge of practical men *are maintained in these cities:*

ATLANTA, BOSTON, CHICAGO, CLEVELAND, DALLAS, DETROIT, KANSAS CITY, MO., LOS ANGELES, PHILADELPHIA, PORTLAND, ORE., SALT LAKE CITY, SAN FRANCISCO, SEATTLE, ST. LOUIS

[There is unusual charm and interest in a new booklet we have prepared: "Ancient and Modern Egyptian Lacquers." We will gladly send you a copy. Please address the New York office.]

can be finished with *Lacquer*
with Egyptian Lacquer

FOR OVER 40 YEARS

THIS SYMBOL is the Egyptian Lacquer trade-mark. Its central figure is that of MAAT, *the Egyptian Goddess of Truth.* It typifies the integrity with which all Egyptian Lacquer products are made . . . their precision, balance, and true quality . . . the fidelity with which Egyptian Lacquers meet the particular needs of the manufacturer who seeks true beauty, fine finish and permanent protection for the products that he makes.

Now the force of national advertising is added to the other advantages which Egyptian Lacquers possess. The campaign started with a full page in the February 19th *Saturday Evening Post* and continues straight through the year. This means even greater public acceptance and approval of products and surfaces finished with Egyptian Lacquer.

The maker who is proud of what he makes, uses Egyptian Lacquer

EGYPTIAN Lacquers

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The most unique and distinctive finish offered the furniture trade during the past year was BREVOKRAK—and 1927 will be another BREVOKRAK year.

Pioneered as a leatherette finish for radio horns, its variety of attractive combinations has brought it into use for many other articles, such as radio cabinets, furniture, fixtures, novelties, toys, etc. Ease of application—uniformity of pattern—combinations to suit your particular requirements, are outstanding qualities of BREVOKRAK.

Thorough-going demonstration made at your plant if desired.

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"Values That Endure"

WAUKEGAN, - ILLINOIS

Northwestern Representative
CAPSER LABORATORIES
611 Ryan Bldg., St. Paul, Minn.

temperature it undergoes decomposition.

There are two general types of boiled linseed oil—"kettle boiled" and "bung-hole boiled" oil.

The "kettle boiled" linseed oil is made by heating the oil in large steam-jacketed kettles, so as to drive off all the moisture, but not heating it high enough to decompose the oil. To this hot oil is then added slowly, a previously heated, liquid "drier," and the mixture is held at a high temperature for some time to insure a more thorough mixture of the drier in the oil. The driers used in kettle-boiled oil are made by heating a batch of linseed oil with a large percentage of a lead or manganese compound. This gives a concentrated boiled oil. Only about one part of this drier is added to about 16 parts of raw linseed oil.

"Bung-hole" boiled oil is of inferior quality to the kettle-boiled oil. It is made by pouring a quantity of liquid drier directly into a batch of cold linseed oil and mixing it a little, but not heating it. In this case the drier is either a lead or manganese resinate or linoleate dissolved in light mineral oil or turpentine.

Bleached or Refined

Linseed oil is "bleached" or "refined," so that it may be safely used in white paint or in light-colored tints. One process of refining oil consists in agitating it with about one percent of strong sulfuric acid and, after settling, drawing off the acid and washing the oil with water. The other process consists of mixing the oil with a little fullers earth and then filtering the mixture. This latter is the usual method of refining linseed oil which is to be used for varnish making, although a true varnish oil is linseed oil which has had its "breaking" properties removed. Raw linseed oil will "break," that is, coagulate and form a mucilageous and albuminous sediment when it is heated above 350-deg. F. Any oil that breaks is unfit for varnish making.

How it Dries

Linseed oil does not dry by evaporation like water, naphtha, and other similar products. A chemical change takes place when linseed oil dries. For instance, if a thin film of linseed oil is placed on a small piece of glass and weighed, then allowed to dry thoroughly, and is weighed again, it will be found that it weighs more after it has dried than it did before. This is because linseed oil, in drying, takes up oxygen from the air. The dried film is known chemically as "linoxyn," and it has a different chemical composition than the original linseed oil had. The drying time for linseed oil may vary from a few hours to eight days, depending upon whether it is raw or boiled oil and also upon atmospheric conditions, such as temperature, humidity, etc.

Adulteration

Linseed oils are occasionally adulterated with such oils as fish oil, kerosene, mineral oil, paraffin oil, corn oil, sago oil, cottonseed oil, etc. In order to determine the quality of the oil, it must be thoroughly tested, as a poor oil can ruin a large batch of paint or varnish.

The output per man in industry now is 35 per cent more than before the war.

Industrial Finishing

PRACTICAL PUBLICATIONS, Inc.
Publishers
Room 603, 222 E. Ohio St.
Indianapolis, Ind.

Issued monthly. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

EDITORIAL

Influence of Color on Designs

The increasing use and popularity of color today, lays open a wealth of possibilities to manufacturers for incorporating new and pleasing decorative effects in their products, but it also adds problems which demand careful consideration. The use of color can enhance or kill the appearance of a product. Design incorporating color decoration, and design in solid color, or a uniform natural finish, will produce entirely different effects. Color alone can emphasize or subdue certain proportions and lines in a piece of furniture, a musical instrument, a motor car or the interior of a room.

Manufacturers who are using color on their products, will do well to give particular attention to the effects it can be made to produce. If money is to be spent on color, then it is decidedly to the interest of all concerned that it be used to the best possible advantage. Very often the designer and everyone in the manufacturer's organization will fail to visualize a simple arrangement of color and shading, which would add much to the beauty and sales appeal of an article.

A case to point, occurred recently when the manufacturer of a well-known automobile employed an artist to make up some display advertising in color, for a program of national publicity. This artist studied a few of the illustrations the company had used in previous advertising and took particular notice of the same cars on the street. He saw the "beauty line"—a distinctive one on that car—which, if emphasized properly, would give the car that long, low, stream-line effect which so many manufacturers of fine cars have been striving for.

The arrangement of color on the cars and on previous illustrations showed the wheels and a shorter stripe above, in the same bright color as the "beauty line." This competition of parts in the same bright color detracted attention from the beauty line and made the car appear shorter and higher, which is just the opposite of what was really desired.

The artist painted a new enlarged picture, in which the car appears against a black background, with all of it in subdued tones excepting the beauty line; this is in a brighter color. The appearance of the car in this new picture is completely changed. It looks lower and longer and, although shown at rest, its lines suggest speed, comfort, style and luxury.

Whether or not this artist's work will be accepted, we are not prepared to say. The case is merely cited to emphasize the importance of color treatment, or color design if you prefer. Color design and arrangement are fully as important as the bulk proportions, dimensions and contours

SHARPLES TRADE MARK SOLVENTS

THE

SHARPLES SOLVENTS CORPORATION

of Philadelphia

MANUFACTURERS OF

PENTASOL (*Pure Amyl Alcohol*)

PENT-ACETATE (*Pure Amyl Acetate*)

ANNOUNCE THE APPOINTMENT OF CHEMICAL SOLVENTS, INCORPORATED, MR. ROLLAND H. FRENCH, PRESIDENT, 297 FOURTH AVENUE, NEW YORK CITY, AS THEIR EXCLUSIVE EASTERN SALES AGENTS

SALES AND DISTRIBUTION OF THESE PRODUCTS IN THE TERRITORY WEST OF PITTSBURGH WILL BE HANDLED DIRECT BY THE SHARPLES SOLVENTS CORPORATION THROUGH ITS OWN OFFICE, RAILWAY EXCHANGE BUILDING, CHICAGO, ILLINOIS, UNDER THE MANAGEMENT OF MR. N. J. HOOPER

of parts in any article that depends upon its outward appearance to attract favorable comment and consideration.

Custom Shop Finishing

During the past year we have witnessed throughout the country, a decided preference for the use of more color to brighten up a great variety of articles which are in common use for both utility and decorative purposes. Furniture and motor cars now appear in bright and striking color schemes, as do also toys, novelties and scores of other familiar articles.

Now, manufacturers who aim for quantity production, have largely standardized their products as to size, design and construction, for purposes of simplification, and to reduce manufacturing costs; but to standardize on colors has in certain cases, presented some resistance at the ultimate sales end of the business.

With the cry for color, there is also a demand by many for variety, distinctiveness, individuality. Different color treatment satisfies this demand to a great extent. To get variety and individuality in color treatment is a problem for the manufacturer, the retailer and the retailer's customers.

Where it is difficult to anticipate what colors a considerable number of customers will prefer or insist upon, one way of handling the proposition is for the manufacturer to supply the retailer with a certain percentage of furniture in the white, or with only a preliminary coating, so that the retailer can satisfy those customers who prefer special colors or finishes by sending the pieces to a local custom shop and having each job done according to specifications.

Where a local custom shop is available and can be depended upon to turn out the work satisfactorily and promptly, this plan finds favor from all who are concerned in the transaction. As a rule the production factory cannot be bothered with much custem work if any, and even if it would consent to handle special jobs, the retailer would probably be bothered with impatient customers, special shipments, delays, misinterpreted orders and various other disagreeable matters.

The plan of turning the special finish jobs over to a custom shop furnishes closer contact between the individuals chiefly concerned with the handling of the sale on a special color basis, and is perhaps the more satisfactory solution of the problem. What is needed, of course, to make this plan practicable, is more modernly equipped custom-finish and paint shops.

Of a world production of steel in 1926, estimated at 91¼ million tons, 53 per cent was produced in the U. S. In 1925, this country produced 50 per cent and in 1913, 42 per cent.

A development which gives unusual promise is dip lacquer.

LACQUERS for Wood

Pioneers in wood lacquers that give a finish that lasts. Made to satisfy users for sixty-nine years. Write us your requirements.

Chas. Cooper & Co.
90 Worth St., New York
Works—Newark, N. J. Since 1857

AD-EL-ITE

T.M. REG. U.S. PAT. OFF.

Finishing Service

adds to the saleability of your product by helping to increase the beauty, originality, economy and durability of its finish.

All effects produced on your samples are exclusively yours, created by practical men from close study of your design combined with their wide experience and knowledge of present day demand in color and decoration.

- ☐ Bedroom
- ☐ Novelty
- ☐ Breakfast Sets
- ☐ Fibre
- ☐ Kitchen
- ☐ Chairs
- ☐ Dining Room
- ☐ Living Room
- ☐ Office and School
- ☐ Cedar Chests
- ☐ Radio Cabinets
- ☐ Juvenile

Simply check to indicate what type of furniture you manufacture, and return this ad to us indicating when you would like the visit to take place. *An inquiry does not obligate.*

Adams & Elting Co.

1833 Seward Street

Chicago, Ill.

"35 years of wood and metal finishing experience"

Questions and Answers

This service department is conducted to meet the readers' need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers

Polishing Lacquer Finish

I would like to know the name of the material and the method used to produce the high luster polish on lacquer work, such as the Cadillac and Stutz cars have. —G. A. H.

We understand that "Park-O-Ruh," made by the Park Chemical Co., Detroit, Mich., and McAleer rubbing and polishing compounds, made by C. H. McAleer Co., Detroit, Mich., are used for rubbing and polishing Cadillac and Stutz cars. Many of the makers of lacquers who advertise in this magazine also have excellent rubbing and polishing materials for lacquers on automobiles.—I. F.

For Luster on Polished Lacquer Surface

We are very much interested in any problems pertaining to lacquer refinishing on automobile work, especially the way to get a gloss on rubbed or polished lacquer, without leaving a scum on the surface; also any appliances that will save labor or produce a better appearing job.—H. P. & S.

The appearance of a scum on rubbed and polished automobile lacquers may be due to one of two causes, or a combination of them. The abrasive used in rubbing out the orange peel may be too sharp or coarse, so as to remove most of the clear lacquer film and expose the pigment particles which are hard to polish, and leave a hazy, smudgy surface. A similar appearance is sometimes caused by the rubbing operation leaving scratches in the lacquer film, which diffuse the light instead of reflecting it sharply, and thus cause a dull appearance.

The second common cause of a smudgy appearance is the use of a polishing material, which leaves an oily or waxy film that may appear bright when first applied, but gradually loses luster upon standing awhile.

The first cause of lack of luster may be eliminated by choosing and properly using the right type of abrasive, whether it be a ready prepared rubbing compound, or waterproof sandpaper and one of the familiar rubbing liquids. Manufacturers and suppliers of rubbing compounds, sand-paper, pumice stone and other abrasives can give much help on this problem.

Many who use lacquer on automobile bodies, have found it easier to secure a brilliant polish if a coat of clear reducer, or a coat containing only a little colored lacquer, is applied after the rubbing operation. This tends to heal any scratches, and floats a fresh supply of lacquer over the pigment particles, making it much easier to get a good luster.

There are several good lacquer polishes on the market which do not leave an oily or waxy film that becomes dull with age. Usually a satisfactory polish contains a quantity of very finely-divided abrasive material,

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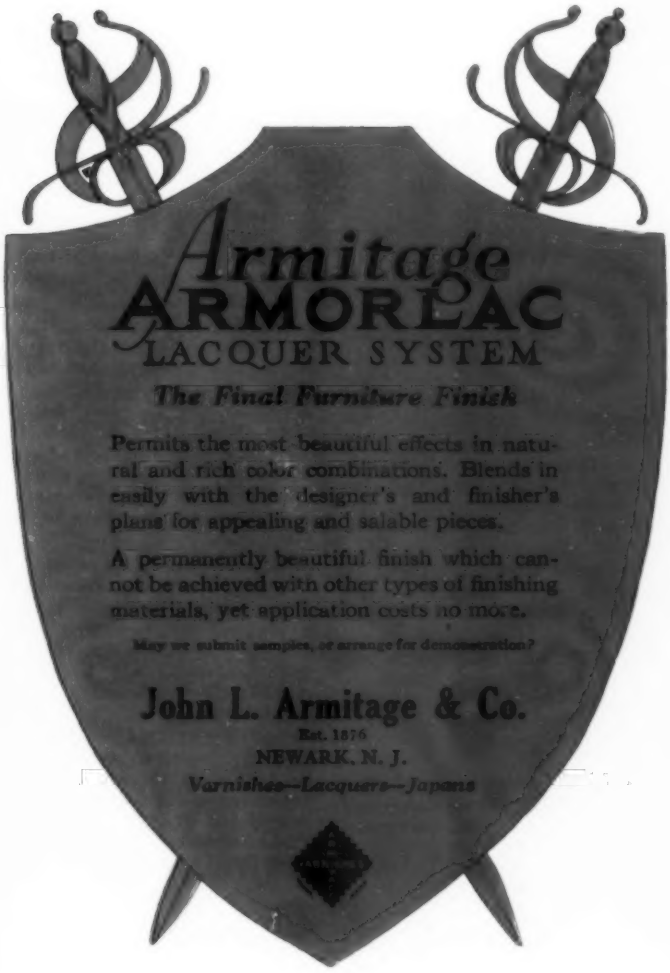
FOR METAL, WOOD, COMPOSITION, REED, ETC.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LACQUER SYSTEM
The Final Furniture Finish
Permits the most beautiful effects in natural and rich color combinations. Blends in easily with the designer's and finisher's plans for appealing and salable pieces.
A permanently beautiful finish which cannot be achieved with other types of finishing materials, yet application costs no more.
May we submit samples, or arrange for demonstration?
John L. Armitage & Co.
Est. 1876
NEWARK, N. J.
Varnishes—Lacquers—Japans

MANUFACTURERS SINCE 1876

Kindly mention INDUSTRIAL FINISHING when writing advertisers

which serves to polish the lacquer itself instead of depositing a temporary glossy film. Manufacturers of lacquer and of finishing room supplies can undoubtedly give you much aid in choosing a proper polish.—I. F.

Finishing Fiber Furniture

For the past three years we have been manufacturing fiber furniture on a small scale. Have experimented with paint products of numerous manufacturers but, as yet, have not succeeded in producing a finish up to the standard of our competitors. Theirs appear to be very hard and elastic—not readily dented or chipped—while ours is soft, even after drying for weeks. Ours is inclined to be chalky.

We use the following procedure in painting our furniture: Two sizings of vegetable glue with 24 hours between applications one undercoat and one coat of enamel. Two thorough glue dippings do not seem to fill the pores or cracks in the paper. Possibly vegetable glue is not the proper material, although various furniture manufacturers have recommended it. What is the entire procedure in finishing this type of furniture?—B. W. F. Co.

There are many types of fiber used in making imitation reed furniture. At times the paper is twisted quite tightly and at other times it is very loose and rough. Smooth results can be obtained on the small, tightly-twisted fiber, with fewer coats than on the more loosely-twisted paper.

The exact procedure of finishing such furniture varies with each manufacturer, depending upon the type of fiber used, the character of the object being made from it and the desired finished results. In some cases, the paper is glue-sized as it is twisted and thus forms quite a hard, dense strand of fiber; at other times no glue or adhesive is used at the time of spinning the fiber.

Most makers of fiber furniture dip the manufactured article in a bath of vegetable glue to stiffen it so it will retain its shape; also to impregnate the fiber so suction of succeeding coats of finishing materials will be stopped.

Few manufacturers use two coats of glue size, since if too much glue is put on the surface of the fiber it becomes brittle and allows the finish to be chipped off easily. This may be one cause of your trouble, since you have been using two coats of glue. A good thin coat of glue is much to be preferred, from a painting standpoint, to two coats or one heavy coat.

It is customary to allow the glue-sized furniture to dry overnight, after which the surface is finished by several popular methods. Some use two coats of paint undercoat and a coat of enamel; others use only one undercoat and one coat of enamel. Still others apply a coat of clear varnish, shellac or lacquer over the colored paint undercoat. In a few cases, one or two coats of colored lacquer are applied, either directly over the glue-sized fiber, or over a paint undercoat.

Gold bronze work is now quite generally done by mixing gold bronze powders in a lacquer bronzing-liquid, and applying this directly over the sized fiber. Antiquing or two-toning is done with oil colors over the gold

SPRACO

Model 14-A Guns

Are

Uniformly Dependable

Recently, one of our customers who uses many Spraco Guns in his main plant, desired to know with certainty that the Guns sent out to his numerous branches would produce the same high quality of work as at home. Fifteen additional Heads taken from factory stock were changed on one Gun, and with but one slight variation, produced the same superior spraying result.

The reason why our Spraco 14-A Gun stood this acid test is because its parts are made with a surety of precision equalling a chronometer. Every Spreader, for example, is an exact duplicate of every other one and interchangeable. A Spraco 14-A Gun does not just happen to be right. It is made that way and is generally accepted as the finest piece of practical mechanism that the industry has yet produced.

Send for bulletin 103 and read of Spraco products. It will indicate to you a way to increase your efficiency.

SPRACO PAINTING EQUIPMENT COMPANY

Executive Offices

60 HIGH STREET -- BOSTON, MASS.

Sales and Service Stations

New York - Atlanta - Detroit - Chicago

bronze, enamel or lacquer, or under the coat of clear lacquer, shellac or varnish.

Glue-sized fiber is by no means an easy material to finish correctly. All paint, lacquer or varnish materials should be especially made for this work, as they must adhere tightly, fill the pores or cracks in the paper as thoroughly as possible, and yet they must be elastic enough to come and go with the fiber, without being soft. We suggest you get in touch with paint, varnish and lacquer advertisers in this magazine, who will gladly help you out of your troubles.—I. F.

Toy Train Tunnels

We are contemplating the manufacture of toy-train tunnels along with other accessories, and would like to have some advice on finishing or painting same. We could not possibly do this by hand as same would be too expensive and take too long. As we are expecting to manufacture a real, honest-to-goodness tunnel — not one like those now on the market —we feel that we must first of all have a good, durable finish which will be attractive to children who play with toy trains.

The material which we will use for constructing these tunnels is a composition, which will take a finish very nicely. Being a reader of your valuable publication we would be pleased to have you suggest a way for finishing these tunnels that would be economical but good. We must also take into consideration that the work must be done quickly.—O. E. S. Co.

Since we do not know the size or exact construction of these tunnels, also whether they are to be finished in several colors or only one color, and many other points of similar importance, we cannot recommend definitely the best system of finishing for you to use. If the construction is such as to permit it, dipping the tunnels into the finishing material would probably be the least expensive method.

As a general rule, spraying is the method next to dipping in point of low cost and, of course, hand brushing is usually the most expensive method of finishing. Why not send a sample of your tunnel, together with complete information regarding color wanted, etc., to one or more of the advertisers in this magazine and let him help solve your problem? —I. F.

For Polished Silver Effect

I am taking the liberty of sending a formula for imitation polished-silver effect done with a spray, as I noticed in January issue, page 80, that one of your readers is interested in this finish.

If the finish is to go on a cast-iron base, first spray with a coat of white lacquer enamel, thinned about 25 percent. Then add a little white lacquer enamel to your aluminum powder, after it is thoroughly mixed; spray right over the white enamel, and you will have a silver effect.

When dry, use a black smut and wipe off the high lights, and

LACQUERS for Autos

Extensively used, free from gum, uniform, reliable and economic. Pioneer lacquer makers who can satisfy your requirements. Write for prices.

Chas. Cooper & Co.
90 Worth St., New York
Works—Newark, N. J. Since 1857

Mrs. Buyer examines the Finish

—and, after all, the buyer decides for herself. She knows little about manufacture, so her taste determines the purchase. We can't change her, and it costs no more to cater to her fancy.

And why not? The finest finish today costs no more than the most ordinary finish of yesterday. With the continuous development in Binks Spray Finishing Equipment, shading and color blending guns, time saving accessories and reduced finishing costs, you can now supply the most exquisite finish even on an inexpensive product. Our Bulletin will give you interesting details. Write for it today.

Specialized Finishing Equipment

for FURNITURE, AUTOMOBILE, ENAMELING PLANTS.

Write for Bulletins

BINKS SPRAY EQUIPMENT CO.
Dept. C. 3114 Carroll Ave., Chicago
ESTABLISHED 1898 *Offices in Principal Cities*

Kindly mention INDUSTRIAL FINISHING when writing advertisers

you have an oxidized effect.—E. M. Stephenson (Stephie)

Referring to B. P. A's question about "polished silver effect" in January issue, the answer by "INDUSTRIAL FINISHING" gives about as good a job as can be obtained by spraying. However, to get a higher polished appearance, apply a good black, baking-japan and when it is tacky (it must be good and tacky) take a piece of chamois and rub the aluminum Bronze into the black; then bake in the oven.—C. O. Miguery.

Glue-Sizing and Staining Fiber Furniture

Have you any articles dealing with correct solutions for vegetable and animal glues used in the sizing of fiber furniture? Also, can you suggest some method by which the stains in colored fiber may be set before sizing, to prevent their running? Glue sizing does not make fiber furniture rough but, in the case of stained fiber, the colors all run together. Have been able to prevent this running by first applying spar varnish and then sizing, but the varnish makes the piece very rough. Any suggestions in this line will be greatly appreciated.—B. W. F. Co.

We do not have any articles dealing with correct solutions for vegetable and animal glues in sizing fiber furniture, but will be glad to receive any information on this point which our readers can give us.

We suggest that your trouble with colors running together, during the glue-sizing operation, is due to the use of water soluble colors for staining the fiber. Why not try oil soluble or spirit-soluble colors, which would not be dissolved by the water in the glue size?—I. F.

Quality should be the deciding factor.

New Color Advisory Service

Realizing how important a part color plays, not only in the sale of every car, but also in every kind of product that is finished with paint, varnishes or lacquer, Valentine & Co. have made a thorough study of this subject. After comprehensive research, they went direct to Nature's color storehouse for inspiration—the precious and semi-precious gems. Here are found a brilliant array of colors and color harmonies expressed in hard-surfaced materials that approximate the finish of metal, wood and other hard materials.

A wealth of valuable information is now available as a result of this study, which is offered to any manufacturer interested in color as a definite aid in selling his product.

New Lacquer—Gibraltar

A new lacquer, produced by the Gibraltar Lacquer Co., Brooklyn, N. Y., is being introduced under the name of Gibraltar Lacquer. This lacquer, the makers state, represents a high type of finish, and is now put on the market after ten years of research and experimentation. It is especially designed for the requirements of the automobile and furniture industries, and is also recommended for the finishing of floors.

Changes in a Du Pont Division

In the Pigment and Heavy Chemicals Division of E. I. du Pont de Nemours & Co., W. F. Donohoe has been made assistant division manager in charge of operations and sales for acids and heavy chemicals. He will be assisted by R. H. Dufnult, Sales Manager, and John N. Haus, Sales Manager of Philadelphia District.

C. H. Rupprecht has been appointed assistant division manager in charge of operations and sales of lithopone, dry color and pigment business, with G. A. McCorkle as Sales Manager, and L. E. Kelly, Sales Manager at Chicago.

Most economical and most highly perfected finishing room equipment

MODERN finishing rooms demand perfection in equipment. A pioneer in the field, Paasche Airbrush Co., by improving and developing its product, has helped to create this demand.

The Paasche Multiplehead Airbrush, with its perfect atomization feature; the Paasche spray booth, insuring perfect ventilation with added safety; the Paasche air conditioning unit, delivering clean, dry air; the Paasche superior rubbing machine minimizing hand labor; all have been engineered to the highest degree of perfection through years of development.

Paasche has *anticipated* finishing requirements and will continue to do so. That's why you will find Paasche equipment in the most modern finishing rooms, where results count.

Paasche Airbrush Co.

1921 Diversey Parkway CHICAGO

New York	Los Angeles	Detroit, Mich.	Cleveland, O.	San Francisco, Calif.
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The Largest Exclusive Manufacturers of Air Finishing Equipment

Simplicity and Efficiency Supreme!

Gast Spray Painting Equipment is without doubt the last word in mechanical spray appliances. It embodies many important features such as extreme simplicity, compactness, greater durability, and economical operation that have put it in a class by itself. It is, conservatively speaking, the MOST practical system in use.

The Low-Pressure principle under which Gast equipment operates (10 to 20 pounds, depending upon the kind of material used) is unquestionably the greatest achievement in the history of spray painting.

A FEW ADVANTAGES of the GAST "LOW-PRESSURE" PRINCIPLE:

1. Reduces fog or mist in the surrounding atmosphere.
2. Retains the more volatile ingredients and puts them on the surface where they belong.
3. Prevents refrigeration at point of nozzle.
4. Eliminates orange peel.
5. Enables operator to work closer to surface—no rebound from surface.
6. Provides greater comfort for the operator.
7. Makes spray painting sanitary.
8. Produces a BETTER finish.

Eight points that mean much to you—all incorporated in the Gast Policy of Service. An inquiry does not obligate.

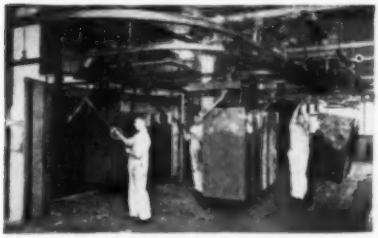
Gast Manufacturing Corporation

Bridgman, Michigan

This Section is devoted to the application, baking and polishing of finishes to be dried in ovens.

Baked Finishing

MAEHLER
Electric Ovens



VOLUME Production in the japanning department at the Yawman & Erbe Mfg. Co. plant reaches a high degree of achievement because of the most modern finishing equipment employed. Four Maehler electric ovens, designed especially to meet the exacting requirements of this well-known company, are used in baking the finishes on filing cabinets, safes and metal furniture. A particular feature of this installation is our recirculating air system which permits perfect baking as low as 12 inches from oven floor. Many will be interested in learning of the extent to which Maehler ovens—gas, electric and oil-heated—may be employed in enameling, japanning and lacquering. Very interesting literature describing the full Maehler line may be had on request.

The PAUL MAEHLER COMPANY
INDUSTRIAL OVEN BUILDERS
2230 W. LAKE ST. CHICAGO, ILLINOIS

DRY-SYS
Standardized Equipment for Low Temperature Drying of Paint, Varnish and Lacquer and for High Temperature Baking of Enamel and Japan.
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NEW YORK · DETROIT · ATLANTA · CLEVELAND · SAN FRANCISCO

FINISHES
ENAMELS LACQUERS
VARNISHES
Are made in a Modern Plant Devoted to making Industrial Finishes only.
THE KAY & ESS CO.
DAYTON, OHIO

What is Necessary for High Class Work

Cleaning and Baking Aluminum Castings

Pointing out essential requirements in the cleaning of metal surfaces to be given a baked finish, and urging the adoption and use of suitable equipment for controlling and recording baking temperatures

By Henry H. Smallwood

THE CLEANING and handling of castings, after delivery to the japanning department, requires great care if success is to be expected. There is no way to tell if the finish will remain the same, because certain defects do not show up at once. Sometimes three months may elapse before the surface of aluminum starts to oxidize and lift the japan in sheets, long strips or round spots.

Before the foreman allows any cleaning to be done, he should first find out about the melting point of the particular castings he is about to clean, as the heat required is an important part of the cleaning. If the castings have been machined, the excess oil should be wiped off with rags, and the castings should be piled on trucks or placed in ovens that have no trucks, and then baked at a temperature 10 to 15 degrees higher than the heat required for the japan used. Castings that will not stand 350-deg. F., should first be washed in gasoline or benzine to remove excess oil.

Sandblast to Clean

After baking, remove the castings and have them sandblasted to clean off the oil and grease that have baked hard on the surface. Sandblasting is, without a doubt, the best method of cleaning at this point; it also leaves the surface in excellent shape to receive the japan or enamel.

Do not sandblast any more castings than can be coated the same day, as leaving of cleaned work overnight permits the surface to oxidize, and it is this oxide that causes poor adhesion of japans and enamels. From the time of sandblasting, castings should not be touched (on the surface to be japanned) with bare hands, because one workman with sweaty hands can spoil more work and cause more trouble than a dozen untrained hands at some other work. The damage done can't be detected until articles start to come back with the finish all off in round spots as big as quarter dollars; the under surface is all eaten away, making very bad spots to repair.

The first coat of japan should not be one that bakes hard and brittle, but one that has the elasticity to stand expansion and contraction of the metal. The finisher can do the filling—if any is required—on top of this first coat. Rub the filler after the required time has elapsed for drying or baking, and then proceed with as many coats of finishing

japan as are needed or desired to make a first class finish.

Accurate Baking Temperatures

The baking of japan is not given the care and attention it deserves. There is often a crowding of the oven with too much work, and as a result half of it comes out of the oven soft. There must be space around each of the articles to be baked, so that the heat can circulate around the surfaces, heating all sides at once. The usual japan oven has a small glass window with a thermometer hanging inside so that you can *guess* what the heat is. After a firm spends thousands of dollars on equipment, why not spend a few hundred more and get something that will give an accurate record of the heat? Then the man in charge can duplicate any given condition at any time.

Under-Baked Finish

A well-finished and properly-baked bit of japanned work is a fine thing to look at, and the wearing quality far exceeds any other finish I know of. On the other hand, the same piece, if not baked enough, will look about the same at the time of leaving the japan department, but it will lose its luster before leaving the factory, and the wearing quality will be considerably less than that of a properly-baked article. Naturally, such work causes a lot of annoying complaints and a possible rejection of the articles on account of the poor finish.

Over-Baked Finish

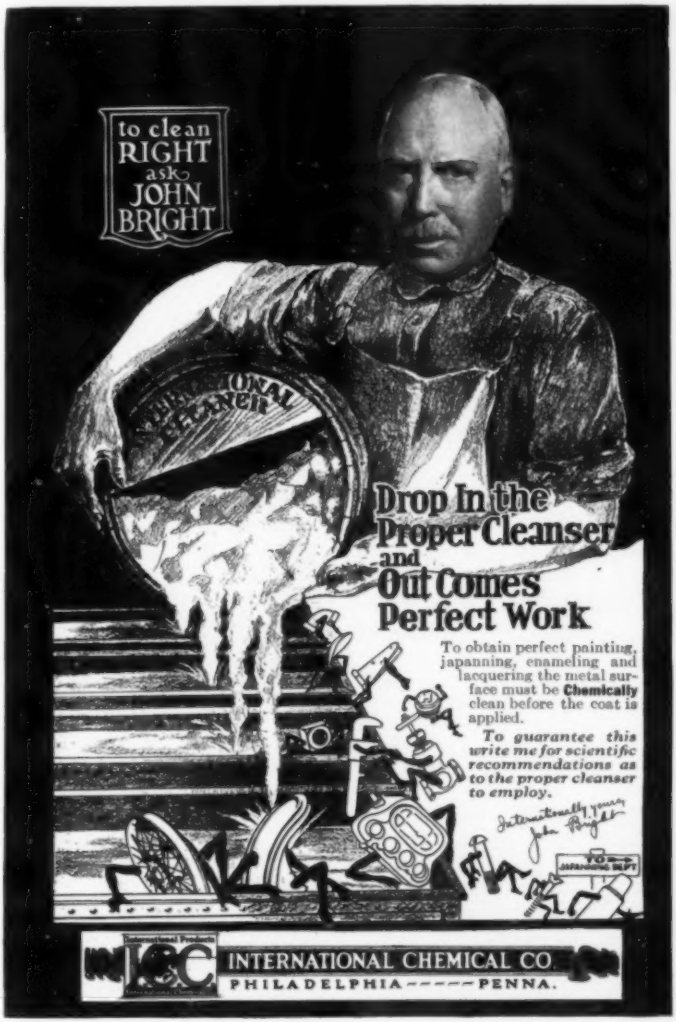
The casting that has been over-baked is easily detected by its blue cast and with three or more coats of japan, it will show the imperfections of the metal and will chip at the least knock. The only remedy for this kind of work is to clean off all the japan and begin all over again. If there is much of this under-baked and over-baked work, it will add greatly to the cost of running a japanning department. With the installation of the proper instruments to record the heat, this difficulty can be immediately overcome. The instruments give the operator a record which he can use as a guide—and one which is thoroughly reliable.

Finish for Iron Castings

We are in the market for a good, cheap finish for iron castings to be used for paper cutters. Have been using a baking japan up to the present time, but feel that perhaps with developments in japans, lacquers, etc., that there should be a better finish at less cost than we are now using.

We are writing to inquire if you know of any product which can be used with satisfaction for the purpose outlined. Of course, the product must be attractive, the finish must be fairly hard and durable, and it must be easy to apply. In addition to this, it must of course, be cheaper than a baking japan.—C. C. M. D.

As a general rule, black baking japans can be used to produce a hard, glossy-black finish cheaper than lacquers, paints, etc., because the original price of the japan is cheaper, it covers more solidly, it can be dipped, and it is hard and durable. There are many varieties of baking japans, however, and it might be advisable for you to get in touch with the various manufacturers of paint, varnish and lacquers in this magazine.—I. F.


to clean
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To obtain perfect painting, japanning, enameling and lacquering the metal surface must be Chemically clean before the coat is applied.
To guarantee this write me for scientific recommendations as to the proper cleanser to employ.
Internationally yours
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INTERNATIONAL CHEMICAL CO.
PHILADELPHIA - - - - - PENNA.

The Baked Enameling of Car Bodies "En Masse"

Consultant on finishing problems describes in detail the cleaning, flowing, baking and rubbing operations performed progressively along a conveyor line traveled by steel bodies for low-priced cars

By K. N. Kathju, M. S.

THE SYSTEM to be followed for finishing automobile bodies in baked enamel, may be suggested as follows:

At the end of the construction conveyor, the body should be made to stand up on its nose. The frame, the entire under portion, and the inside should be given a coat of "scrap" enamel (enamel saved in subsequent operations) with an air brush, thus preventing the ravages of Nature's elements from encroaching upon its sanctity and creating rust.

At this point the car body should be hung on an overhead conveyor, as shown in Fig. 1, and allowed to bake one hour in an oven at 325 to 375-deg. F. If wood has been used as trim rail, etc., the oven temperature must not be allowed to exceed the maximum limit of 375-deg. F., else the wood will not hold the tacks that are used in trimming.

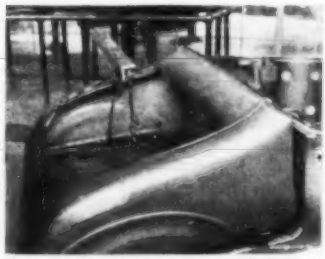

Fig. 1—Showing body suspended from overhead conveyor.

Sand and Clean Thoroughly

Allow the car body to get comfortably cool, then proceed to sand the bare metal, using No. 6-0 Al. oxide cloth. This accomplished, the entire surface—especially in and around the door hinges, mouldings and other inaccessible parts—should be blown off with compressed air. Next

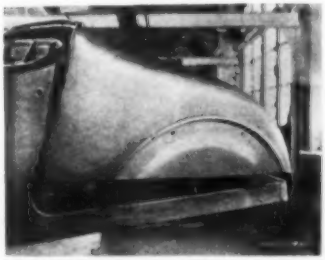

Fig. 2—Notice how rear deck of roadster body is blocked up from frame.

proceed to wash off the grease, oil and dust left on the surface by workmen's hands, using a towel dipped in a solution of 50 percent benzol or gasoline and 50 percent water. If necessary use a "water tool" oval brush for the purpose.

Since in the construction of car bodies, soldering very often becomes a necessity, and since the soldering compounds often used are acid in reaction, it is always desirable to wash the entire surface with an alkaline solution, as recommended previously in the pages of this magazine. However,

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absolutely protects the health of the operator. Indorsed by factory and insurance inspectors.

Scientific engineering principles are here employed in a new way. All air pockets are eliminated. The baffle plates are so arranged as to produce a uniform pull across the entire face of the booth. No back drafts. The finishing room is kept free from fumes, odors and gasses.

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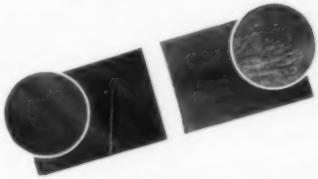

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Here is a sensitive one-finger control that lets you vary the width of the stroke instantly. Remarkably easy to use. Designed like a revolver. Lightest gun made. Perfectly balanced. Does not tire hand.

Pneu-Gun ATOMIZATION

The stronger the magnifying glass through which you examine the finish put on with a Pneu-gun using your own type of material, the more apparent is the wonderful fineness of the work done by this gun.

Try out the same material in any other spray gun. You will at once realize that a gun can make or spoil the finish. A Pneu-Gun in many instances does away with a large part of the sanding—a big saving in production cost.

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Established 1894
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should it be necessary to hammer out dings, bumps, etc., same should be taken care of before proceeding to use the alkaline body-wash.

From this point on, the overhead conveyor should run through a glass enclosure, dust proof and adequately supplied with washed-air ventilation, see Fig. 3. As the conveyor moves along, the entire car body is carefully tack-ragged and rendered perfectly clean.

The Primer Coat

At this stage it passes over a flow pan, which is provided with a reservoir at the bottom and one hose on each side. The material to be flowed is forced through the hose by a pump and motor attached to the reservoir. The sides of the tank are built in slantingly so that the excess of material in use may drip into the reservoir below. Then the material is forced back into the fluid hose, which carries a spray nozzle. As the car body passes over this pan, the doors are partially opened and, in case of a roadster, the rear deck is blocked as shown in Figs. 1 and 2. This is done to avoid any sags, through the quick setting of drippings, immediately below the door sill and the rear deck platform.

Having taken these precautions, the hose is raised above the cowl and primer is flowed over the cowl rather quickly, using the windshield-frame channel for a guide. Having finished the cowl, the front doors are next flowed, and so on until the entire

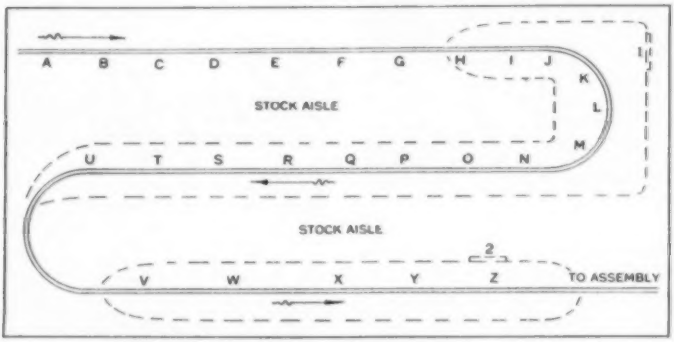

Fig. 3—Suggested layout of equipment along overhead conveyor line. Dotted lines indicate portions of conveyor inside glass enclosure. Final inspection follows operation at **Z**.

A—End of construction.
B—Slushing booth.
C—Oven
D—Bare metal sanding.
E—Preliminary washing.
F—Hammer out.
G—Final Wash.
H—Tack-rag.
I—Flow prime.
J—Dripping primer.
K—Oven—primer baking.
L—Water trough—sanding.
M—Tack-rag.
N—Flow first-coat enamel.
O—Dripping enamel.
P—Baking first-coat enamel.
Q—Oil sanding first-coat enamel.
R—Wipe and tack-rag.
S—Flow second-coat enamel.
T—Dripping second-coat enamel.
U—Oven baking second-coat enamel.
V—Oil sanding second-coat enamel.
W—Wiping and tack-ragging.
X—Flow—finish coat.
Y—Drip—finish coat.
Z—Bake finish coat.

1 and **2**—Doors opening into glass enclosure.

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Nothing to worry about and nothing to get out of order—that is the paint man's idea of an ideal compressor.

In designing Worthington FEATHER (Reg. U. S. Pat. Off.) Valve Compressors every effort was made to realize these ideals. Among the features of Worthington Compressors are:

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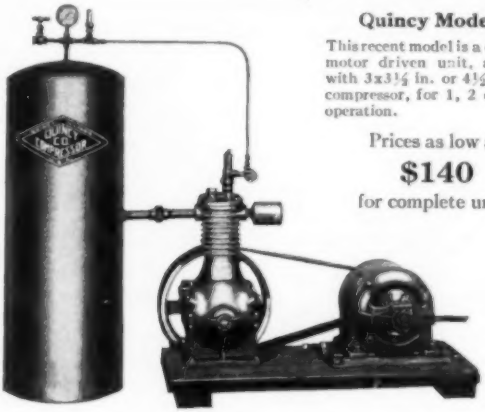

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This recent model is a complete motor driven unit, available with 3x3½ in. or 4½x3½ in. compressor, for 1, 2 or 3 gun operation.

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The heart of your paint spray outfit is the compressor. Make sure that yours is a Quincy. Then you'll know it's ample in size and power—a source of uniform pressure and dry, clean air that you can always depend upon.

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QUINCY COMPRESSOR CO.

305 Maine St. **Quincy, Ill.**

K751

car body has been given a coat of primer.

While the enamel itself will bake hard on bare metal, the car body is given one coat or more of a heavy oil-base primer, which primarily functions as a filling-up medium to obliterate all defective metal pits, file marks, etc.

It has been found expedient to brush close to the lower dripping edge of the car body, thereby positively avoiding possible runs, sags, etc. The car body, after having dripped for about 10 to 15 minutes, enters an oven at a preheat of 175 to 200-deg. F. and is force-dried by evaporation and oxidation, at a peak heat of 275 to 375-deg. F. for 1½ hours.

As the car body emerges from the oven it may be water sanded, or oil sanded, using No. 240 or 280 Al. oxide sandpaper. Where an exceptionally good surface is desirable, the entire surface may be sanded with a hard felt block, pumice stone and oil. If water sanded, the car body should be washed, wiped, and oven-dried for about 20 minutes at 175-deg. F. In other cases, it is customary to tack-rag the entire surface.

In passing, the reader may be reminded that the use of a "skiver" in all sanding operations is exceedingly important. A skiver is generally a piece of rubber 4-in. long, 2½-in. wide and ⅛-in. thick, although some are made of leather, and are in sizes other than those given above. However, when the sharp edge of a skiver is pulled across a sanded surface, the depth of sanding may be very clearly discerned. Although it may seem a little out of place, the use of a skiver is strongly recommended in sanding

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Resist continuous heat without discoloration.

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It is a service that can be obtained only by users of Zellac or by those who wish to investigate the advantages of Zellac spray, dip and brush lacquers and lacquer enamels—advantages which cut costs, speed production, increase efficiency and boost the sales of your products.

To increase the salability of our customers' products, attractive Zellac Tags are furnished upon request.

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ZELLAC
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lacquer coats, for the detection of orange-peal surface.

First Coat Enamel

While the surface of the car body is being thoroughly tack-ragged, it passes over the flow pan containing the first-coat enamel. As in the case of the primer, the car body is flowed with one coat of the first-coat enamel, the workman being careful to brush off the edge thus avoiding sags along mouldings and edges.

This first coat of enamel, unlike the primer coat, has a dual function to perform. On account of its "body" or viscousness, it serves to fill in scratches, pits, etc., which could not be taken care of by the primer coat, besides giving a very elastic ground-coat for the finishing enamel of the same color.

After the enamel has been allowed to drip for about 10 or 15 minutes, the car body enters the oven, to be baked at about 375-deg. F. for 1½ hours. When it leaves the oven, the enameled surface is oil sanded, the workman using No. 280 or 320 Al. oxide paper and being careful to sand either horizontally or vertically, but never haphazardly.

Second Coat Enamel

Having sanded the surface—not forgetting to resort to a skiver—the workmen carefully tack-rag the car body and, as it passes over the flow pan, give it another coat of the same enamel as used for the first coat. This second coat again serves to fill in the metal scratches, file marks, etc., if any, incidentally piling on another coat of ground.

Allowed to drip 10 to 15 minutes a third time, the body passes

CURTIS COMPRESSORS, HOISTS, CRANES, CAR WASH SYSTEMS, PORTABLE COMPRESSOR UNITS

Filter Clogging is Minimized!

By the Curtis Controlled Splash Oiling System

The above picture shows the spray paint method being used in finishing our own product. This company was among the earliest experimenters with proper compressor equipment for paint spraying. Long ago we found —what some manufacturers apparently have yet to learn —that supplying compressed air for successful paint spray work is far from being as simple as it looks.

Keeping the oil, which lubricates the compressor from overloading the filter and then mixing with the paint and spoiling the work is just *one* item. This and the numerous other technical problems involved were long since ironed out, thoroughly and permanently by the Curtis engineers.

Curtis compressors are so designed, and are built to such exacting standards of accuracy, that they are ideal for this class of work. This is verified by the almost universal adoption of Curtis compressors by paint spray gun manufacturers.

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Please send me information about Curtis Compressors.
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CURTIS COMPRESSORS

CURTIS PNEUMATIC MACHINERY COMPANY, ST. LOUIS, U.S.A.

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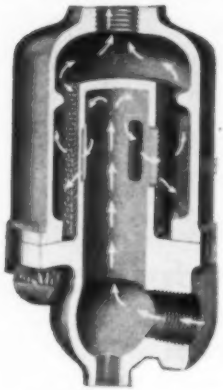
A perfect finish with dry air



YOU can get a perfect finish if you use a Gast Compressed Air Separator to supply your air sprays with dry, clean air. These separators remove every particle of oil and moisture.

THE air follows the course shown by the arrows above. In traveling from the inner to the outer chamber the air must pass through several thicknesses of coarse brass screen. Oil and moisture from the air are deposited on the screen and drain off below. The air leaving the separator is perfectly dry and clean.

YOU can try a Gast Separator for thirty days without expense or obligation. Send us the coupon below.

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Please send me a Gast Compressed Air Separator for a 30-day trial.
Size (state whether for ¾-inch or 1-inch line)

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1F3-Gray

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into the ovens and is again baked at about 375-deg. F. Then it passes into a trim line where the barren inside undergoes interior decoration during a period of 2 to 3 hours, depending upon the magnitude of the job and the available labor.

At this stage, car bodies are carefully inspected for scratches, etc., and those requiring repairs are taken off the line and, when properly sanded or "cuttled" in soap and water, are sent back to be given a second coat of enamel.

Those car bodies that have passed the censoring of the inspector, move along the conveyor and are oil sanded with a fine grade of sandpaper soaked in oil. This much accomplished, the car bodies are wiped clean. For this wiping the operator uses a piece of nainsook dipped in a solution of 50 percent denatured alcohol and 50 percent water, and wrung almost dry.

Finish Coat Enamel

Then the surface is tack-ragged. As the scrupulously-clean car body passes over the flow pan containing the finish-coat enamel, the flow nozzle is again brought into play and the car body is given the last coat of finish enamel. This is likewise allowed to drip, after which it is baked at 375-deg. F. for 1½ hours.

The car bodies, thus finished, have an almost perfectly elastic film and a finish which is hard to beat—one which is comparable to the proverbial "patent leather finish."

Industry is still bending its efforts to increase productive efficiency and lower costs.

DU-PROS SHELLAC

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Use it as a **First Coat**
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DRIES TO A VELVET FINISH

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Cleaning Metal for Japan

To successfully enamel or japan metal surfaces, it is absolutely essential to have the surface thoroughly clean before the paint or japan is applied. This means that all greases, oils and foreign matter should be thoroughly removed.

A modern way to do this is to actually clean the metal p'eces in a chemical solution contained in steam-heated tanks or washing machines. The ideal chemical to use should be one that is non-inflammable, non-explosive and non-injurious to the workers; one that will clean thoroughly, clean rapidly, and will not leave that alkaline film on the metal which draws the sweat out of the pores and causes the japan or paint to buckle, crack, or gray.—I. C. Co.

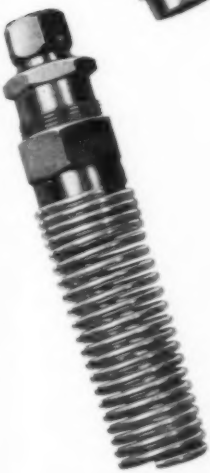
Notes on Ventilator Flue

Referring to the accompanying illustration, published in October 1926 INDUSTRIAL FINISHING, with an article entitled "Ventilation and Fire Protection," this drawing shows the motor, fuse box and snap switch unit, F, installed inside the ventilating duct, which is a flagrant violation of the rules of the New York Board of Fire Underwriters.

The sharp elbows in the ventilating duct are all wrong too. The inner radius of the elbow should be 1½ times the diameter of the pipe (In this case 24 in.) because a sharp elbow tends to increase resistance, therefore causing congestion of gasses in the ventilator.—W. J. Smart.

Note By Editor: Mr. Smart is mistaken about the fuse box and snap switch unit F, being inside the pipe. These are on the

Spray Hose Couplings



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Any size of hose and any size of connection for any make of spray equipment.

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Makers of the famous Sphinx Glass Run Channel.

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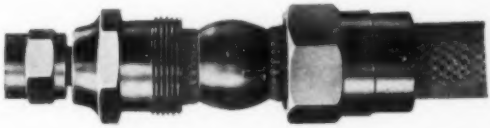

The EASTMAN Way

Announcement!

V. J. DOLAN & CO.

Is the name under which the old firm of HARRY J. LINDEMAN & CO. will hereafter be known. This change is in name only, as the personnel of the company remains exactly as heretofore.

"UNQUESTIONABLE QUALITY"

Is the standard, and Mr. Dolan's years of experience in the line assures the best of everything new in UNQUESTIONABLE QUALITY WOOD FINISHING SUPPLIES.

DOLAN'S Lacquer Fillers
Lacquer Shading Stains

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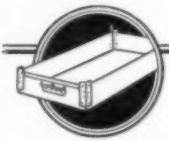
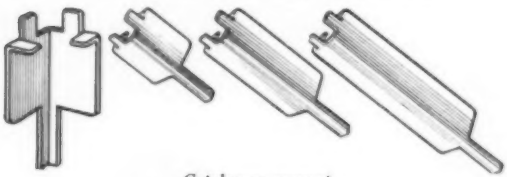
CARRYALL TRAYS



For efficiently handling articles in the course of manufacturing, the "TOTE BOX" as some call them.

The Vilas Improved Tray

eliminates having various depths.
The corner post does the trick.



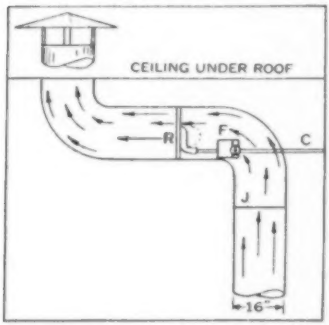
Catalog on request

R. L. VILAS

278 Whalley Avenue ::: New Haven, Conn.

outside. Only the motored fan is on the inside. We agree that the pipe elbows are shorter in radius than recommended by blow-pipe and ventilating engineers.

This sharp elbow is a mistake on the part of our artist. However, since this fan is really

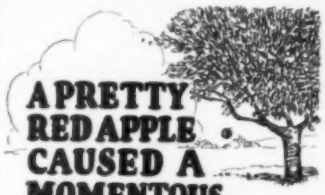


moving what you might call "only free air"—not being laden with escaped spray material or dust, shavings, lint, etc.—we believe the air passes through it freely enough for all practical purposes. At any rate, it does work in practice. Glad you called our attention to it.

Greasy Hardware? No! It's Lacquered Now

Note by Editor: A recent letter from Mr. E. M. Stephenson, lacquer salesman, reads as follows:

"Inclosed please find a true story of how the tool trade was started to use lacquer instead of oil or grease. With the campaign we made on the tool trade, it was the means of doing away with all the oil-soaked boxes you used to see in hardware stores—



A PRETTY RED APPLE CAUSED A MOMENTOUS DISCOVERY

--------and the story goes on to tell how the falling of this pretty red apple caused Sir Isaac Newton to wonder why it fell. Because he wondered WHY-------- he discovered the Laws of Gravitation.

If you wonder about our advertising -----and send for our free booklet called "FINISHING FACTS" you will be put directly in the way of making a discovery.

ALAKA Lacquers are cheaper to use. They give more coverage per unit of area. They give a finish that lasts.

Make your discovery----------
Write for FINISHING FACTS!

LACQUER & CHEMICAL CORPORATION
214-224 Fortieth Street
Brooklyn, N. Y.

Put Another String In Your Bow!

Now is the time to fortify yourself with another reliable source of supply for your

Soluble Cotton

Write today for free samples and check them up before the lacquer season gets into full swing.

All Grades
All Viscosities

Nixon Nitration Works

Dept. F. Nixon, N. J.

"Nitrators since 1898"

When writing for samples please state quantities, grades and viscosities desired.

not only oil soaked but covered with dust. A hardware store looks clean now, and you can buy a wrench or hammer without taking a bath afterward. Yours, Stephie."

The story, in printed circular form, reads as follows:

"What's it all about?" said the proprietor, as he came rushing up just as the customer went into high for the second time. "Why, it's all about this and this," the customer yelled, as he dropped the greasy wrench and held his gloved hands before the merchant's eyes.

Sure enough, there it was—right on his new gloves—a never-to-leave mark of grease, oil or some smearing concoction. The maker meant well, but he overlooked the dealer's problem and the customer's right of close examination.

"I'm sorry," apologized the dealer. "I do try to remove all excess grease when the tools come in. It sticks around somewhere, it seems. Makers insist on using it, not thinking of the frequent loss of sales resulting from just such mishaps as yours. I'll stand the price of your gloves, however."

Just then a stranger, evidently a salesman, came in. "Pardon me, but where is the plant of the Perfection Hardware Co.?" he asked. He got the address and incidentally the whole story of what had just happened. It was a Perfection Hardware wrench.

"Thanks; you've given me a fine tip. Similar opportunities have given my company a reputation as originators of fine finishes that have revolutionized many lines. We often make successes of new ideas and prospective failures," the salesman remarked.

" 'What do I sell?' Careless of

LACQUERS
ENAMELS

Henry V. Walker Co.

17 John St., New York City

Works:
Jersey City, N. J.
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Successor to
Lacquer Division of
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MANUFACTURERS
SINCE 1887

WOOD FILLERS
STAIN POWDERS
STAINS

LET US MATCH MATERIALS YOU ARE NOW USING AND SUBMIT SAMPLES WITHOUT OBLIGATION OR COST.

882 McKIM ST., BALTIMORE, MD.

C-R-CO
FURNITURE WHITE UNDERCOAT

The name has been altered slightly but the quality remains unchanged.

C-R-CO has made many friends among the foremost manufacturers of fine furniture.

If you are not already a user it's time to try a sample.

Write today

CHASE, ROBERTS & COMPANY
ESTABLISHED 1840
Fifth Street and West Avenue
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LUXOR
INDUSTRIAL FINISHES

UNDERCOATS for Enamel and Lacquer

Are unsurpassed for smoothness of finish.
Will stand any lacquer without "popping."
A generous trial sample sent on request.

The Sargent-Gerke Co.

Producers of
Lacquers, Enamels and Undercoats
INDIANAPOLIS, IND.

me not to mention it, but we fellows get so enthusiastic about our goods that we almost forget pay day. My name is E. M. Stephenson. I'm selling—lacquer and lacquer enamels. My product is a finish for metal, wood or in fact anything. It's not new but we make it do new things. We service men work in connection with our Research Division and quite frequently startle the merchandising populace by doing the supposed impossible."

Subsequently, Stephenson showed the wrench manufacturer how to produce a finish that would not stain the hands—a rust-proof, attractive finish that would stand the gaff and not check, crack, peel or fade—an economical finish that adds sales value to the line.

Salesman Improves Store Fixture Finishing

The sale of industrial finishes today often depends largely upon the ability of the salesmen to:

1—Appreciate the buyer's requirements, conditions and problems;

2—Recommend satisfactory materials and methods better adapted to accomplish the desired results, and,

3—Successfully demonstrate and apply the materials and methods he recommends.

Having had several years' experience with wood-finishing and metal-finishing, I find this actual finishing experience is very beneficial in my selling activities in connection with industrial finishes. I am always willing to give advice, and this helps to obtain selling results.

Recently I called on a manufacturer of store fixtures, who

KESSCO PRODUCTS

SOLVENTS are an important factor in your overhead and one worthy of close scrutiny.

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Amyl Alcohol
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Butyl Propionate
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Ethyl Lactate
Diethyl Phthalate
Diamyl Phthalate
Dibutyl Phthalate
Dibutyl Tartrate
Triacetine
Special Solvents

KESSLER CHEMICAL COMPANY
ORANGE, N. J.

"AROLAC for EXCELLENCE"

AROLAC

It was our ambition for decades to have lacquers and lacquer enamels excel regular paints and varnishes not only in technical advantages and chemical supremacy, but also in dollars and cents. This is now realized in AROLAC Products. By this, we mean, first: the *covering capacity* of AROLAC; and second: the *price* which makes the use of AROLAC an obvious necessity.

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Wood lacquer, Silver and Aluminum lacquer, Bronze lacquer, Brush Brass lacquer and enamels in all colors, glossy and egg shell finishes.

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(ESTER)
LACQUER GUM

Increases adhesion. Makes for greater gloss. Insures maximum toughness in nitro-cellulose lacquers.

Manufactured by
Paramet Chemical Corp.
LONG ISLAND CITY, N. Y.

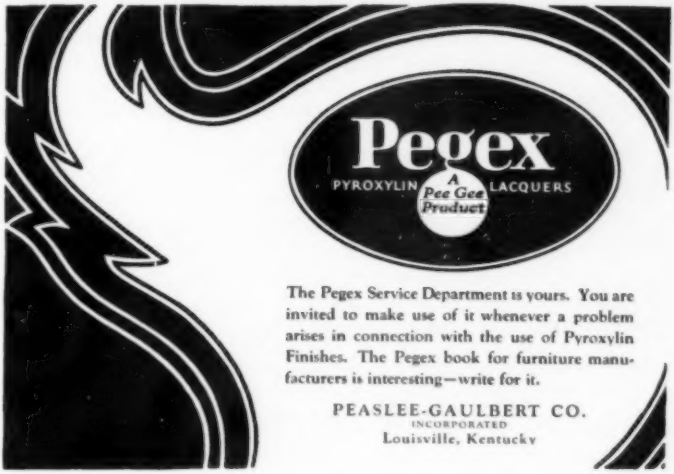
has been using oil stains—mostly mahogany—and using a varnish for his finishing coats, the last coat being rubbed. He has lately been making quite a lot of fixtures for chain stores. There always seems to be a great hurry to open these stores, but the scheduled openings were usually delayed on account of the concern having to wait for the fixtures to be finished.

At my suggestion the fixture manufacturer installed a spray machine and began to use lacquer. Believe me, he is now delighted with the results, and so are the chain-store people, who can now open their stores on scheduled opening days.

Now I had not sold one dollar's worth of material to this fixture manufacturer, but suddenly I received, through our office, a message to see this man at once. When I arrived he was all excited, declaring that lacquer had changed his mahogany shades. This trouble I soon remedied by going to work and mixing samples of stain myself, using not nearly as much red in my mixtures—allowing for the lacquer to attack the aniline and give the desired shade.

Since then I have made a brown mahogany stain for him, just using walnut stain with very little red mahogany stain added. This gives him a pretty shade and it is now being used for all his chain-store work.

The foreman finisher was using, at that time, two grades of lacquer—a flat and a gloss combined, which gave him a semi-gloss, but he had trouble; he was not getting a uniform sheen. Then I got busy again and had our lacquer department match the desired sheen. As a result of



The Pegex Service Department is yours. You are invited to make use of it whenever a problem arises in connection with the use of Pyroxylin Finishes. The Pegex book for furniture manufacturers is interesting—write for it.

PEASLEE-GAULBERT CO.
INCORPORATED
Louisville, Kentucky

Ask the man who uses lacquer!

PLC

The PLC Trade Mark on the container is a guarantee of a laboratory tested product that today is recognized as giving universal satisfaction. A request will bring a generous sample.

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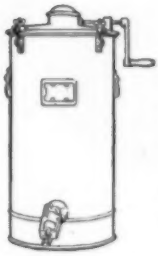

Time is money in the finishing room

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For easily and efficiently mixing lacquers, paints, enamels, Duco, varnishes, etc. Save many minutes wasted in mixing and filling spray cups. Constant uniformity of the mixture is always assured.

Patent Pending.

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Aldwych House Aldwych, W. C. 2 LONDON, ENG.

Terre Haute INDIANA

Plants: Terre Haute, Ind., and Peoria, Ill.

this service, he now obtains his material uniform, and saves time mixing.

The present schedule for finishing this fixture work, which is mostly over birch, including some whitewood, is as follows:

> Stain; two coats of orange shellac (3-lb. cut, reduced, three parts shellac to one part denatured alcohol) and sanded between coats; then two coats of the semi-gloss lacquer.

This certainly does give a good clean finish. The semi-gloss lacquer is not rubbed, which again saves time in not rubbing. Therefore, you can now see that the industrial salesman's help and advice to the industrial finisher really produce results—Joseph Cowan.

Built-Out Spray Booths

In some sections of the country it is customary to build pent houses outward from factory

These pent houses, projecting from factory wall, contain spray booths.

walls, in order to provide space outside the factory wall line for spray booths. An example of

Fast to Light

PENETRATING OIL STAINS

Pylakrome Oil Brown Mahogany
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Pylakrome Oil Light Walnut
Pylakrome Oil Dark Walnut

These are Aniline dye crystals that can be used with Benzol, Benzine, Turpentine, Linseed Oil, Waxes and Lacquers.

They penetrate the wood without raising the grain and do not fade.

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Our Prices Will Save You Money

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Manufacturing Color Chemists
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Satinite Colors

In liquid form, ready for the spray or brush, in over 40 popular shades, offer you the most satisfactory line for the production of colored furniture combinations so much in demand.

Beautiful, Fast, Durable and Safe with 15 years of real service to recommend them.

Write for information, or better still, let our service man show you what these materials will do.

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Manufacturers
Satin Finish Products, Coach Colors, Varnishes and Lacquers
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From over the country comes enthusiastic comments about the effectiveness of Campbell's new way to prepare Paint and Varnish Remover. And particularly, because Campbell permits you to have a good remover at much less than you are paying now.

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A free book "Getting Away From the High Cost of Paint and Varnish Remover" will be sent to you free upon request. We suggest that you write for your copy now, today.

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Our Laboratory and Research Department have made special study of protective coatings for the use of Industrials.

We recommend several of the following products:

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CHROMOX PRIMER
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and
BUCK WHITE LEAD

We will be pleased to give full information on any or all of the above mentioned products, and request that when you are in the market for this class of goods that you communicate with us.

SAMUEL H. FRENCH & CO.
Paint and Varnish Manufacturers
Philadelphia and Camden
Established 1844 Incorporated 1920

this, as viewed from the outside, appears in the accompanying picture.

Realizing the several advantages of having spray booths extending outward from a room, instead of projecting so far into it, some concerns have planned their new buildings with offsets in the foundations and walls, to provide for the booth recesses from the ground up.

This setting of the spray booth beyond the wall line leaves more space available in the room for other purposes, gives more light, is more convenient for the spray operator and for the progress of work from one operation or station to another. Still another advantage—a very important one—is that this arrangement permits the installation of an automatic fire door which will close the booth in case of fire.—C. E. James.

Furniture Lacquer—Good and Otherwise

What advantages, if any, do you find in the use of pyroxylin lacquers, other than the speed obtained in finishing articles and the unusual toughness obtained through the use of same?

Of course, there are other advantages, such as the lacquer film being impervious to atmospheric changes, hot water, etc. In rare cases lacquer will give a certain sheen that cannot be obtained with any other type of finishing material.

However, the two chief reasons for the extensive use of lacquer, I believe, are as given in the first paragraph.

If such be the case, that is, if we desire to use a pyroxylin lacquer because of its extreme dura-

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AMERICAN GROUND ITALIAN PUMICE STONE

A 99% pure product, uniform in grain and hardness. Goes further because each individual particle cuts uniformly, besides producing quicker and better work for the same reason. Our service is also an important factor, since direct importation and our own large and modernly equipped factory enable us to meet your requirements immediately.

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Our Silver Lacquer is considered the best obtainable for Industrial Products.

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FREE samples and prices sent on request.

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156 West Avenue, Long Island City, N. Y.

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BUTYL PROPIONATE

The Economical "High Boiler" for Brush Lacquers

Manufactured by the Wilbur White Chemical Co.

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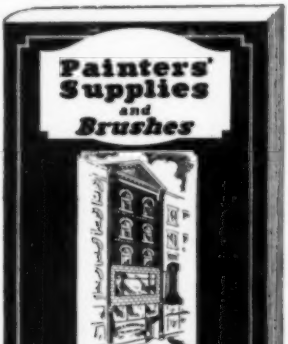

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Everything For The Painters Use

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GEO. E. WATSON CO.

"The Paint People"

164 W. Lake St. CHICAGO

bility and toughness, and other wearing qualities, then we must necessarily use a lacquer that contains a large proportion of nitrocellulose. For instance, we have seen advertisements as follows, "Will do anything any other lacquer will do," which, by the way, means absolutely nothing, for alas! many lacquers now on the market will accomplish practically nothing but give a quick finish. In reality some are only spirit varnishes, and should be labeled as such.

Therefore, when choosing a pyroxylin lacquer be sure you are getting a lacquer that contains enough pyroxylin to insure a tough, durable film.

One of the largest desk manufacturers in the country informed a salesman that he wanted a certain lacquer finish on his mahogany, and at the same time he showed a sample of what was desired. The finish must work out good on mahogany and must not have that old, grayish effect, and it must be a film that fills well.

I wish to make a bold statement here, but nevertheless one that is true; it might do well for each finishing foreman to bear it in mind.

A lacquer that fills well, similar to shellac, and that gives you an imitation varnish effect on mahogany, is almost sure to be so loaded with gum content that all durability is lost, because so little nitro-cellulose is present.

When the above mentioned desk manufacturer demonstrated his desired finish, the salesman readily saw that it was much nearer to a substitute shellac than a varnish. It was pretty. It filled well. It dried quickly, but it would not stand any tests for durability and toughness.—J. C. Hertstein, Jr.

$74 "EUREKA" $74
CURTIS AIR COMPRESSOR

Size 2⅛" x 2½", 10" x 30" Air Tank, Gauge, Safety Valve, Drain, ½ H. P. Motor, Belt, Electric Cord and Plug. Exactly as shown. Twice the capacity of other makes.

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For Lacquer and all finishes.

Complete variety of shades. Samples and information on request.

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For GOLD A finish to depend upon.
For SILVER An economic lacquer made by pioneer lacquer makers.
For BRASS Send us your requirements

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Works—Newark, N. J. Since 1857

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Industrial Finishing

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We have a real opportunity for two or three successful live wire salesmen to connect with a growing lacquer and lacquer enamel concern. Only those who are, or have been with a lacquer house and command a good volume of business need apply. Please reply in detail in first letter and give references. ATLANTIC ENAMEL & LACQUER WORKS, Inc., 75 West St., New York City.

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"Having noticed in INDUSTRIAL FINISHING an article in reference to myself, I am taking the liberty of telling you that, while I have retired from the Zapon Co., I am still calling on the same line with different materials; in fact, I am traveling for the MacDermid, Inc., at Waterbury, Conn."—E. M. Stephenson.

Water Soluble

PADLESS ARTISTIC DAKALITE ECONOMICAL CONVENIENT

Wood Stains

DAKALITE DARK BROWN MAHOGANY

"—an absolute fastness to light, at a much lower cost."

Dakalite Products Co., Inc. **Minot, North Dakota**

Advertisers in this Issue

Adams & Elting Co. 57
Arco Company, The Third Cover
Arizona Lacquer Mfg. Co. 90
Armitage & Co., John L. 58
Ault & Wiborg Co. Back Cover
Berry Bros. 45
Binks Spray Equipment Co. 63
Campbell Co., M. L. 94
Chase, Roberts & Co. 88
Commercial Solvents Corp. 92
Compound Specialty Co. 95
Cooper & Co., Chas. 56-62-98
Curtis Pneumatic Mchy. Co. 79
Dakalite Products Co., Inc. 98
Day & Co., James B. 81
Denny, Hilborn & Rosenbach 6
Detroit Rubber Products Co. 83
DeVilbiss Mfg. Co. 8
Dolan & Co., V. J. 84
Drying Systems, Inc. 68
DuPont de Nemours & Co., E. I. 27
Egyptian Lacquer Mfg. Co. 50-51
Eureka Pneumatic Spray Co. 97
French & Co., Samuel H. 94
Gast Mfg. Co. 66
Gibraltar Lacquer Co. 39
Glidden Co., The Front Cover
Grand Rapids Blow Pipe and Dust Arrester Co. 49
Grand Rapids Varnish Corp. 43
Griffiths & Co., K. F. 95
Hilo Varnish Corp. 2
Hobart Bros. Co. 100
Innis, Speiden & Co. 96
International Chemical Co. 71
Jamestown Wood Finishing Co. 82
Jones-Dabney Co. 33
Kay & Ess Co. 68
Kessler Chemical Co. 89
Kroeger Bros. 87
Lacquer & Chemical Corp. 85
Larkin Co. 77
Lilly Varnish Co. 4-5
Lindeman Wood Finish Co. 1
Lockwood & Co. 98
Lucas & Co., John 34
Maehler Co., The Paul 67
Marietta Paint & Color Co. 21
Mayer & Loewenstein 23
Mellish-Hayward Co. 73
Murphy Varnish Co. 17
Nixon Nitration Works 86
O'Neil Duro Co. 41
Paasche Airbrush Co. 65
Peaslee-Gaulbert Co. 91
Paramet Chemical Corp. 90
Pecora Paint Co. 29
Pittsburgh Lacquer & Chemical Co. 91
Polk & Co., R. L. 97
Pratt & Lambert, Inc. 25
Pylam Products Co. 93
Quincy Compressor Co. 76
Reichenbach, Inc., C. L. 98
Rockford Varnish Co. 31
Sargent-Gerke Co. 88
Sharples Solvents Corp. 55
Smith-Monroe Co. 80
Spruance Co., The Gilbert 19
Spraco Painting Equipment Co. 61
Stickney Color Co. 93
Sun Varnish Co. 37
Universal Varnish Wks. 99
Valentine & Co. 47
Vilas, R. L. 84-92
Walker Co., Henry V. 87
Watson Co., Geo. E. 96
Waukegan Chemical Co. 52
Worthington Pump & Machinery Corp. 75
Zapon Co., The Second Cover
Zeller Lacquer Mfg. Co. 78

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Are You Searching for a Lacquer that SPRAYS ON *and* STAYS ON?

In this fast moving age . . . ten years is a long time. Yet, ten years ago the Arco Company already had perfected a white pyroxylin lacquer and undercoats for use on toilet seats and hospital furniture.

Two years later . . . after careful experimentation and tests . . . Arcozon was placed on the market and immediately recognized as the highest development of a pyroxylin lacquer system.

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In the near future . . . may we show you why Arcozon is entirely foolproof . . . flows on smoothly . . . and speeds up production? What date will be most convenient for you?

THE ARCO COMPANY · CLEVELAND, OHIO

Paints Varnishes Enamels Lacquers

THE ARCO PYROXYLIN LACQUER SYSTEM

SPRAYS ON ARCOZON STAYS ON

(69)

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